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Honey Column.

CITY MARKETS.

NEW YORK.—Demand for fancy white and buckwheat comb honey good, with stock in the market scarce Medium grades are in less demand. We are quoting to-day as follows: Fancy white, 1-℔. section, 16; A No. 1 white, 1-℔ section, 15; No. 1 white, 1-℔. section, 13@14; No. 2 white, 1-℔. section, 11@12. Extracted fancy white clover, 8@8½; extracted light amber, 7½@8; amber buckwheat, 6@7; fancy buckwheat, 11½; No. 1 buckwheat, 11½; No. 2 buckwheat, 9@10. Beeswax, 26½@27; fancy, 28@29.

CHAS. ISRAEL & BRO.,
Dec. 19. Cor. Canal and Watts Sts., New York.

CHICAGO.—No special change in the prices since last quotations, but the market is a quiet one. Receipts are larger, and the demand is not as good as it has been. Most of the retailers have laid in a supply to carry them over Christmas. We quote best white comb at 15; an occasional lot of fancy brings 16; off grades of white, 12@14; amber, 10@12. Extracted, 8@9 for fancy white; amber, 7@8; dark grades, 6@7. Beeswax, 27.

R. A. BURNETT & CO.,
Dec. 20. 163 S. Water St., Chicago, Ill.

ALBANY.—Honey well cleaned up, and selling at good prices. Fancy white, 16; No. 1 white, 14@15; mixed, amber and dark, 11@14. Extracted white, 8@8½; amber, 7@7½; dark, 6@6½. Beeswax, 25@28.

MCDOUGAL & CO.,
Successors to Chas. McCulloch & Co.,
Dec. 21. Albany, N. Y.

BUFFALO.—There is no change to note in the demand or price since our last issue. The following is the market for honey: Fancy, 15@16; A No. 1, 14@15; No. 1, 13@13½; No. 2, 11@12; No. 3, 10@11; fancy dark, 11½@12; good dark, 10@11; extracted white, 8@8½; dark, 7@8. Beeswax, 29@30, and demand good.

Dec. 12. W. C. TOWNSEND, Buffalo, N. Y.

MILWAUKEE.—There is no particular change to note in the condition of this market and honey since our last report. The demand is not what it should be, or what is usual at this season of the year. The supply is sufficient to meet current demand, and values rather easy—especially on comb sale. Extracted meets a more ready sale. We continue to quote fancy 1-lb. sections, 15@16; A No. 1, 14@15; amber No. 1, 14@15. Extracted white, in bbls., kegs, and pails, 9½@10; extracted dark nominal, 7@8. Beeswax, 25@26.

Dec. 21. A. V. BISHOP & CO., Milwaukee, Wis.

NEW YORK.—Stock of comb very good. Demand good at former quotations No change in extracted, with a fair stock on the market. Beeswax in good demand at 27@28.

HILDRETH & SEGELKEN,
Dec. 22. 120, 122 West Broadway, New York.

BOSTON.—Our market continues without change in price, although the demand is very light, owing very largely, we think, to the high prices prevailing. Still, with the small stock on hand we believe that the high prices will continue.

BLAKE, SCOTT & LEE,
Dec. 21. 57 Chatham St., Boston, Mass.

KANSAS CITY.—We quote No. 1 white comb, 14; No. 2 white, 13; No. 1 amber, 13; No. 1 dark 12½. Extracted, white, 7½@8; amber, 7@7½; dark, 5¼@5½. Beeswax, 22.

C. C. CLEMONS & CO.,
Dec. 22. Kansas City, Mo.

WANTED.—Comb and extracted honey. State price, kind, and quantity.

BLAKE, SCOTT & LEE,
57 Chatham St., Boston, Mass.

WANTED.—Your honey. We will buy it, no matter where you are. Address, giving description and price.

THOS. C. STANLEY & SON, Fairfield, Ill.

WANTED.—Comb and extracted honey. State price, kind, and quantity.

R. A. BURNETT & CO.,
163 South Water St., Chicago, Ill.

WANTED.—Extracted honey of all kinds. Mail sample, and price expected delivered at Cincinnati. I pay spot cash on delivery.

C. H. W. WEBER,
Successor to Chas. F. Muth & Son,
2146-48 Central Ave., Cincinnati, Ohio.

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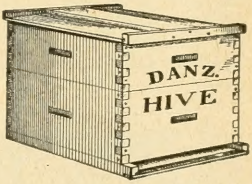
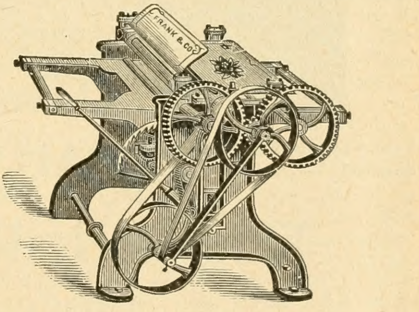


Root's Goods in Kansas.

Carl F. Buck, Augusta, Butler County, Kansas.



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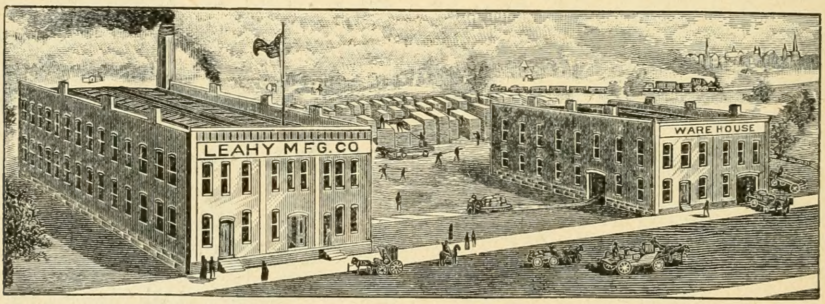

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GLEANINGS IN BEE CULTURE

A Journal Devoted to Bees and Honey and Home Interests.

Illustrated Semi-Monthly

Published by The A. I. Root Co.

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VOL. XXVIII. JAN. 1, 1900. NO. 1.

STRAY STRAWS FROM DR C. C. MILLER

IT'S FINE. This in answer to that first question on page 935. [Fine? what was fine? I had to look clear back to page 935. Thanks. —ED.]

ON PAGE 928 it is said that alfalfa "makes good honey." I think that's the first time I've seen any testimony that alfala was of value as a honey-plant as far east as Michigan, and I'm wondering whether it may not possibly be mixed up with alsike.

IMITATING THE BEE. "Why don't you take example from the little busy bee?" inquired the man of original ideas. "I do," answered Meandering Mike. "An' I want to call your attention to de fact dat about now is when de little busy bee lays off an' doesn't do no more work fur de nex' six months."—*Washington Star.*

THE *Revue Universelle d'Apiculture* mentions an offer of GLEANINGS of $25 each for dorsata queens, and ardently wishes success to the enterprise, because in the hands of its American confreres *Apis dorsata* will not delay to multiply rapidly, and to reach Europe *Nous verrons.* [That offer is still good; but no one has taken it up yet.—ED.]

D. W. HEISE gives in *C. B. J.* his trick of getting unfinished sections cleaned out. At 4 P. M., set in the open only as many as the bees will clean that day, putting the sections at least 1½ inches apart in the supers. Don't remove till 4 P. M. next day, and then replace with fresh ones, and so on till all are done. All right, friend Heise, only I suppose you always put out a sufficient number. If the number is too small, they'll surely be riddled.

SOMETIMES we become so accustomed to errors in speech that we no longer recognize them as such. My good friend Stenog, to whom I look up as authority in general, has evidently allowed himself to fall into the lazy habit of confusing the sounds of short *o* and broad *a*, as in *not* and *all.* If he will look in the dictionary he will see that they are unlike; and if he will observe those who speak *correctly* he will find that they are never alike in "common talk." I can not say "not all olives" without a distinct dropping of the under jaw at the middle word.

R. F. HOLTERMANN says, p. 924, that, when the foundation is "removed from the bottom-bar a distance at least equal to the thickness of the plate and whatever was melted away from the wax sheet," that distance is too much for best results. With any foundation I have ever tried, that distance is too little, for the foundation will surely buckle unless there is space for a bee to crawl under, in which case the space will too often be left in the finished section. The remedy is to have a bottom starter.

W. H. PRIDGEN succeeds in giving a just-hatched queen on the same day on which the old queen was removed. Friend Pridgen, if you take a queen just hatched, one that has not been held in her cell, and put her in a hive where there is a laying queen, I think you will find that she is *always* kindly received without the removal of the old queen. The trouble comes when she attains a little age, perhaps a day or so old, when she begins to assert herself as a queen, at which time the two will no longer be tolerated under the same roof. [Correct, according to my experience. —ED.]

"DURING THE HONEY-FLOW, when breeding is heaviest, bees require most water," p. 922. May be so in some places and conditions, but the reverse is the rule here. When a heavy flow comes, the watering-places are largely deserted, and when you see bees again at the water you may count the flow is letting up. I suppose they get enough water for their needs, in the nectar. [Yes, doctor; but is it not true that, when bees are breeding heavily, they require the most water, irrespective of *where* or *how* they get it? And yet I think you are right in saying that the bees gather most water when the honey-flow is not on, especially when brood-rearing at such times is at its height.—ED.]

"A BEE-KEEPER who contemplates much moving of bees should adopt some sort of closed-end frame," page 920. Fixed-distance frames, friend Rambler, but not closed-end for this gluey locality. [Right there, doctor, I think you are just a little wrong. I have come to the conclusion that, where propolis is very bad, a closed-end frame is better than the Hoffman, and a metal-spaced one better than either. But there are right and wrong ways of using frames with closed uprights. I am inclined to think that such frames, close fitting—that is, those whose end-bars reach to within ⅛ or $\frac{1}{16}$ of the ends of the hive—just room enough for easy insertion and removal—would work all right with you. I do not believe you ever tried exactly that; and if you have, you have not tried it thoroughly enough.—ED.]

W. A. H. GILSTRAP, p. 928, puts the annual consumption of honey by a colony of bees at 100 or 200 pounds. I think Doolittle puts it at 60. Quite likely it may be 40 pounds less in New York than in California, for in New York bees are nearly dormant for months. Pity we can't know somewhat definitely about it. [As you intimate, it all depends on where one lives. In Florida, and, in fact, nearly all of the Southern States, where the winters are more or less open, and the bees can fly every day, the consumption of stores is very much greater than in the North, where the bees go into their long winter sleep.—ED.]

L. STACHELHAUSEN raises a fresh question, p. 925. He says the bee begins field work when it is 18 days old. Tradition says 16. He also makes 34 days the life of a worker. Tradition says six weeks—eight days more. Mr. S. is a man who generally knows what he is talking about. Has he good ground for thus lightly treating the traditions of the fathers? [While there is a slight discrepancy in the actual time, yet they are near enough when we consider the influence of various conditions and localities. I could readily see that in Colorado, for instance, the average life of the bees would be shorter than here, for the reason that their honey seasons are much longer. Would not this alone explain the difference in the life of a worker?—ED.]

F. A. SNELL gives his bees a little smoke before carrying in cellar (p. 930). That smoke may do no harm, but I'd a little rather not have it. If they trouble about coming out, I wait till another time. If for any reason I don't want to wait, I throw against the entrance a cloth dripping wet. The bees back off from the cold thing, and in the cellar it can be removed with no bees clinging to it. [We winter now exclusively out of doors; but when we wintered indoors it was our practice to loosen the hives shortly beforehand, either from the hive-stands or from the bottoms, so when the hive was finally picked up to be carried, there would be no snap or jar; and if it was handled quietly clear to the cellar no bees would come out. Smoke was useful at times, and we always had a smoker lighted for emergency.—ED.]

GLADLY would I receive information from Wm. M. Whitney (p. 930), but I am obliged to say that one of the things that I know, if I know any thing about bees, is that, while there are conditions that will make the same colony produce sections whiter at one time than at another, the chief difference is in the colonies themselves. I had some Punic or Tunisian blood among my bees, and those bees at any and all times made greasy-looking sections, no matter how white all the other bees were working. They were good gatherers, but their product brought 2 cents a pound less than the rest of my honey, so I couldn't afford to let their queens live. Last season No. 70, from first to last, made sections distinctly whiter than any other colony, although the material and conditions seemed the same for all. [Yes, I remember very distinctly that the Tunisian bees that we had made the greasiest-looking comb honey of any bees we ever had —greasy because they daubed it all over with propolis, giving it somewhat the appearance of honey that had been badly soiled.—ED.]

PROF. GASTON BONNIER made some exhaustive experiments, and found that, under precisely the same conditions in other respects, the difference of soil made a notable difference in the nectar of plants. White mustard gives more nectar on calcareous than on argillaceous soils, while buckwheat is the reverse. A good honey-plant in one country may be worthless in another. [Exactly so. Buckwheat is a reliable honey-plant in New York; but in this State it may or may not yield. Alfalfa yields immense quantities of honey in Colorado and Arizona, but so far as I know it has not distinguished itself in the East—partly because so little of it is grown. But did you ever know of a place where sweet clover would not grow, and where the bees did not work on it when in bloom? It grows, and yields honey in more States of our Union than almost any other honey-plant that is known, I believe; but in only a few localities does it yield enough to make a perceptible showing in the supers.—ED.]

I HAVE BEEN profoundly moved by that Home Talk, p. 943. Does the saloon power hold by the throat all those elected to make and to execute our laws? I solemnly promise that, so long as my life is spared, I will vote for no man who is not pledged against the saloon. Brother A. I. Root, will you join me? [Yes, and no. When a candidate is not likely to run up against the saloon question, I see no reason why he should necessarily be made to pledge himself. What I mean is this: There is danger in flaunting the "red rag before the bull" unnecessarily. This stirs up the animal, makes him fight, and harder to kill. Instead of shooting our ammunition away in every direction, and keeping almost continually firing, I believe in the policy of using and concentrating it at a time and place where it is most needed. There are many officers who have more or less to do with the liquor question. It is from them that I believe in securing pledges; and if the candidate does not stand for God and the right, work to defeat him, no matter what his party. That's what we have been doing.—ED.]

SOMEHOW a wrong impression seems to prevail, that, in getting bees to clean out unfinished sections, the bees must be allowed to get to them only gradually, as by giving a small entrance or putting in a dark cellar.

Not at all, unless the number of sections is too small for the number of bees. With sufficient sections you may put them out in the open without fear. I put them in cellar (it's a light cellar) because they can stay there safe from rain for several days. If I should put a single super in the cellar, the sections would be ruined. [Regarding that wrong impression, I take it that you refer to something I wrote in answer to Questions from Beginners. While you are no doubt entirely correct so far as it relates to the practice of bee-keepers of experience, yet it would hardly be wise to advise beginners in the same way, would it? There are certain cures for foul brood that work all right in the hands of a professional, but which would produce disastrous results with a beginner, and the same is true in regard to feeding back. The main thing to look out for is to give the bees enough honey so that they do not have to scramble and struggle against each other; but a beginner would hardly know how much to give.—Ed.]

Among exasperating things, one of the worst is to have one's interest aroused in something and be told all about it except the very thing that will make the information of practical value. Mr. Editor, you've stirred up a lot of us about that new kodak, p. 935. Now tell us what it is and what it costs. Of course, we can't afford $50 or $100 for a kodak, but we like to know, you know. [The kodak that I referred to was the No. 4 folding kodak, listed at $25, and it is capable of a great variety of work. The manufacturers have a larger instrument at $35, but for my purpose the smaller one is more convenient, and quite large enough for any thing that I require for Gleanings. I believe that lately The Eastman Kodak Co., of Rochester, have made quite a reduction in the price of these cameras. Just how much that reduction is, I do not know; but you can ascertain by going to your nearest dealer, or, better still, write to the company itself, from whom you will receive a handsome souvenir in the way of a beautiful catalog. This is not a "paid puff," for the editorial opinions of this journal can not be bought in the interest of any concern; but we will gladly give, free of charge, a recommendation when we know that an article has real merit from our own knowledge and experience. —Ed.]

PICKINGS

FROM OUR NEIGHBORS' FIELDS.

BY STENOG.

Just gone is "eighteen hundred;"
Down the ages be there thundered
Praise for victories unnumbered
  We have gained o'er space and time.
In the century just closing,
With its progress so imposing,
  We have seen and heard and learned more
  Than Methuselah in days of yore.

Just as the above lines were finished there were laid on my desk two books of poems by Charles H. Crandall, one entitled Wayside Music, and the other The Chords of Life. They were sent us by that veteran bee-keeper L. C. Root, of Stamford, Ct., and his approval of such works is enough to commend them to others. I have read quite a number of the poems in both books, and as I became more acquainted with the spirit of the writer the better I liked to read his lines. The books are beautifully printed, neatly bound in cloth. The thoughts center around New England largely, and are beautifully expressed. I can't help saying, however, that a better punctuation could have been adopted in some places. For instance:

There are four little letters that live in my heart—
An L, and an O, and a V, and an E.

How much better the last line would read to have it,

An L and an O and a V and an E,

as the words are all equally connected by the conjunction!

BEE-KEEPERS' REVIEW.

Whew! what a number this is—50 pages! Mr. Hutchinson has outdone all previous efforts here by way of pictures. It baffles description. We have a view of Barnes Co.'s works at Rockford, Ill.—the men who make saw-tables, foot-power buzz-saws, etc. Here is a view of the residence of the editor, Mr. H., also those of the editors of this journal. But the list is too long to mention in detail. Send for a copy. Mr. Hutchinson's story of his struggles in getting a start is interesting and touching.

BEE CHAT.

This spicy and concentrated little sheet, published by Samuel Simmins, author of "A Modern Bee-farm," etc., Heathfield, England, is worthy of more notice than it has been receiving. In the issue for November the editor warns all against buying old stocks from discarded apiaries, as complications are almost sure to arise. "A large number of partly diseased stocks crowded together on a long journey generate the most fatal temperature for propagating the malady, and are sure to develop further evidence of disease at an alarming rate thereafter." Before buying discarded apiaries it is best to make a personal examination. Disregard of this precaution has just led to much acrimony between some of Mr. Simmins' friends, and their letters were so intensely personal that he could not print them. He well says, "It is sad to think what mischief is often done through want of thought."

⁂

As between foreign and native bees, a correspondent says the latter are nowhere in the race. He had nine foreign stocks in one group, and another man thirty natives in another, on the same ground. He called his neighbor to look at one of the supers, when the neighbor said, "I have nothing like it," while he himself had several as good. One black stock with a younger queen completed only one section. The natives would not touch foundation,

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which the yellow race drew out freely, and he finds that the latter maintain a larger population in fall. He finds an Italian queen mated with a Carniolan drone better than any other.

* * *

"Native bees are decidedly more subject to foul brood than Carniolans or Italians; while the latter more readily respond to treatment when affected, and will quite frequently dispose of the malady without aid from the owner." The editor says it is an undoubted fact that colonies will at times recover, not only without medical agents, but most certainly by treatment which aims solely at exterminating the complaint by causing the spores to germinate under conditions where they can not be reproduced. The whole matter, he says, turns upon racial vitality and energy. His first terrible experience with foul brood occurred over twenty years ago. The bees attacked were, with two or three exceptions, so-called black bees, and these could not keep the disease under. The Italians soon disposed of it with a little assistance; and upon removal of the queen every vestige of the complaint disappeared from the combs. On later occasions, in buying black bees from a distance the disease came upon him again, but at no time has he had any difficulty in keeping foreign stocks clean, while those bought were readily treated as soon as the queens were changed and the foreign varieties hatching out. On one occasion he bought a number of stocks from (as he then found) an infected source. Half were native, the rest Italian. The former were diseased, but none of the Italians. Are not these significant facts? At a convention held in Melbourne, Aus., Mr. W. Symes said he found black bees so much subject to foul brood that he despaired of getting rid of it; but since he introduced the Italians the disease has gradually disappeared, and has now ceased to trouble him. But it is idle to say that these strong races *may* not have foul brood.

OPPOSED TO LIGHT WEIGHTS.

The 10-cent Section a Detriment to the Business; The Danzenbaker Hive and Section.

BY E. J. HAIGHT.

Please do not go into the booming and making of light-weight sections too fast, as the present high price of honey will not warrant the policy of a 10-cent box, in my opinion — that is, to retail for that. A section that will average 14 oz. or over will take no more work to prepare it for the bees to fill and to case it for market than a section weighing only ½ or ¾ of a pound. Then the amount of wood, dry beeswax, etc., costs about the same on a little box as a 1-lb. box, which is so much more waste to the consumer for his money, as well as a waste of time and expense to the producer; in fact, the item of wax in a light thin section that the bees have to make is more than in a thicker one. I believe it would result in the loss of many pounds of honey to the bee-keeper.

I have sold more or less honey in Port Jervis, N. Y., for a number of years. Two years ago a certain class of dealers wanted and must have, as they said, a section they could retail for 10 cts. They did not care particularly how much it weighed. They wanted my light weights, and I had to sell at a ruinous figure, and a ruinous trade resulted, for they do not order any more. But another party who gave me a fair price for well-filled boxes buys every year, and handles an increasing amount; so I believe it is best for the bee-keepers not to go into the policy of a 10-cent box, as the present high price of honey will very much help us to get away from that standard. The increasing demand for honey, that every faithful bee-keeper is trying to stimulate by the aid of those leaflets and by the mighty power of the press, makes me think we had better keep that idea of a 10-cent box, which a great many times is confounded with 10 cts. a pound, out of sight. Some say, "Why, Mr. Jones is selling his very best at 10 cts. a pound, and you want 12 or 13 cts. No, no! I don't want your honey. I can do better." I have had this confront me many times; and a friend has just written me that light weights have hurt his trade very much. I think a nice Danzenbaker section, 4×5, that comes pretty near the 1-lb. mark, with a carton on, that can be handed out for 20 cts. retail in cities, or 15 cts. in country places—not less than that—will satisfy all parties best in the long run.

Now a word in regard to cleats on the inside of hives, and also supers. Do not make them of basswood, as they will swell so they are too tight. We had to dress off $\frac{1}{16}$ inch from each by hand last spring, so we could get them out at any time. Inside fixtures should be of pine.

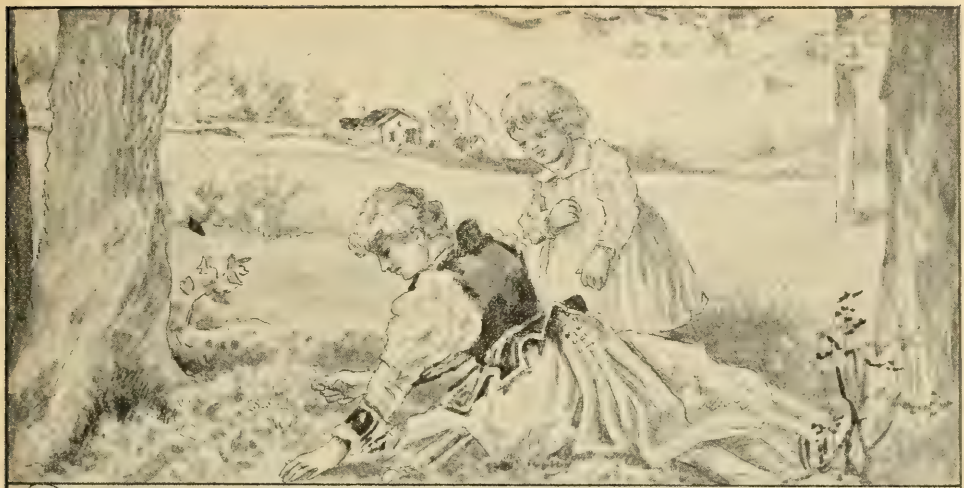
I am pretty well satisfied with the Danz. sections and hives, except the fault above mentioned, as my Danz. section honey netted me (the No. 1 honey) 13 cts. loaded on the cars here, and No. 2 11 cts. cash. About ¾ of the Danz. sections were classed as No. 1 honey instead of No. 2—a big item.

Rock Valley, N. Y., Nov. 3.

[In all these questions we must not forget the bearing that locality has, and that individual preferences can not be made to harmonize. In Canada, light weights are sold almost exclusively.

We are not "booming" light weights, nor have we been. We have simply called attention to them as being preferred for certain markets. You would think the "booming" of 4×5 Danzenbaker would be all right, when friend Ochsner (see page 752 last year) would think it "a nuisance to bee-keepers at large." Mr. O. is a strong advocate of the 4¼ section, and he could not be made to see the matter as you do on the *shape* of the section, although he might agree with you on the light-weight question. Of course, if you were compelled to sell your heavy weights for light weights, that would be a sacrifice.

As to cleats in the Danzenbaker hive, that matter had already been brought to our attention, and is being rectified as rapidly as possible.—ED.]



The Dead Bee.

Illustration By R.V. Murray

By Alice Lena Cole.

in Century Magazine of May - 1899.

1

Dead amid the dewy clover
Lies a bonnie little rover
Who could shape his course afar,
Without compass, without star.

2

Nevermore across the azure
Shall he sail in search of treasure,
Nevermore, when day is gone,
Home shall hie his galleon,

3

From the jonquil's golden chalice
And the lily's ivory palace,
And the violets' divine
Cups of white and purple wine.

4

Smile, smile on, thou faithless
summer,
To forget thine early-comer.
Say, if thou hadst first departed,
Had he still been merry-hearted?

5

On the boughs in rapture swinging
Gleefully the birds are singing.
I, who mourn thee, little Bee,
Will pronounce thine elegy:

6

Be it meetness or unmeetness,
Thou didst garner up life's sweetness,
Wiser than the sages wist;
Earth has one less optimist..

For Gleanings in Bee Culture.

THE RICKE SECTION-FOLDER AND FOUNDATION-FASTENER.

A Simple, Cheap, and Practical Machine that any Mechanic can Build.

BY HON. J. M. HAMBAUGH.

I have the pleasure of mailing you photos of the new Ricke section-press and foundation-fastener, all in one machine. See Fig. 1. No. 2 shows Miss Maude Ricke, daughter of the inventor, Mr. F. W. Ricke, in the act of pressing a section which she has just folded from the pile on the right. This is done by pressing a lever with the foot, which brings the notched block from above down upon the dovetailed section joints. The lever then being raised, the block is lifted by a coil wire, the spring of which can be seen at the top of the machine. This done, the section is simply removed and dropped down on the folder (see Fig. 3); a strip of foundation is placed in position, the folder pressed in, and the heat from the lamp, as seen in the cut, instantly melts, and as quickly fastens the wax to the wood, and the section is ready to set at once in its place in the super or section-case.

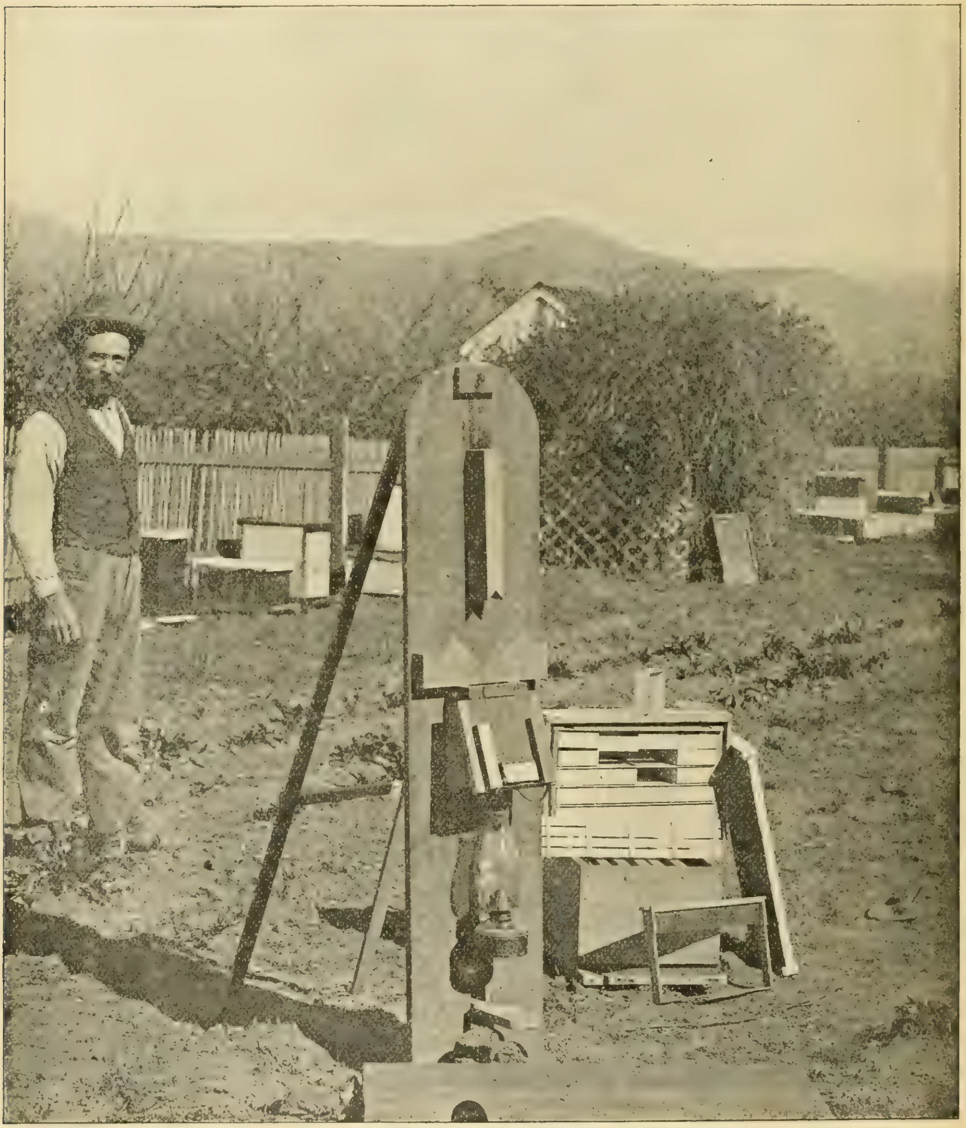


FIG. 1.—MR. W. F. RICKE AND HIS COMBINED SECTION-PRESS AND FOUNDATION-FASTENER.

The advantage Mr. Ricke claims with this machine is that it requires only one time handling of the section from the unfolded pile to the section-case, ready for the hive. With sections, cases, fences, followers, and wedges at hand, there need be no piling-up of folded sections, waiting to be rehandled to a foundation-fastener, nor is there any occasion for piling up sections with starters, to cause annoying mishaps, which is so trying to the patience. To minimize labor and lessen liabilities to mishaps, has been the object of the inventor; and if by this invention he has contributed something in that direction, he will consider himself amply paid.

Mr. Ricke says he can fold, press, foundation, and place in the super 4 sections every minute.

Mr. Ricke is a carpenter by trade, and quite an inventive genius. He has about completed a solar wax-extractor that, in our estimation, is very unique, and we may give the readers of GLEANINGS a glimpse of it soon. Mr. Ricke has recently purchased a fruit-ranch near our city, and is interested in bees to the extent of 32 colonies. His bees are in 8-framed Root Simplicity hives, with metal bearings and Hoffman brood-frames. He is thinking of changing to 10-frame hives, however.

Escondido, Cal., Dec. 7.

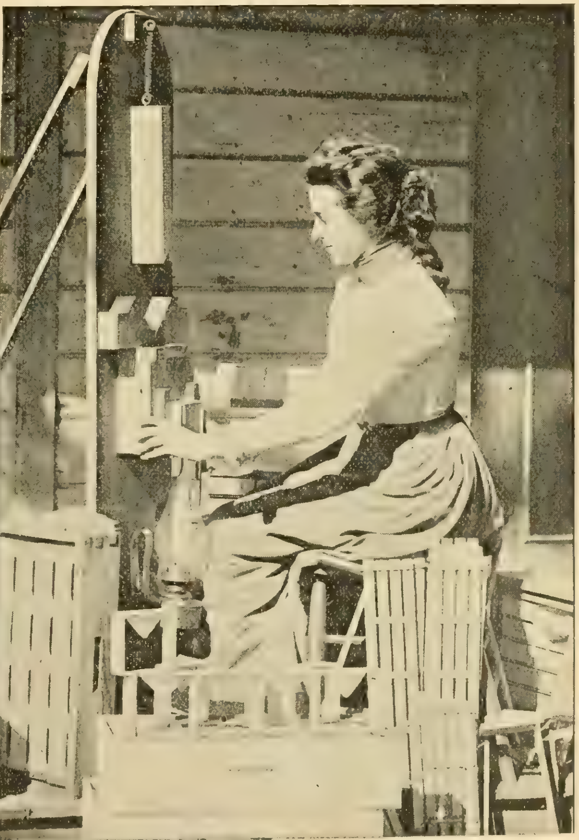


FIG. 3.—FASTENING THE FOUNDATION.

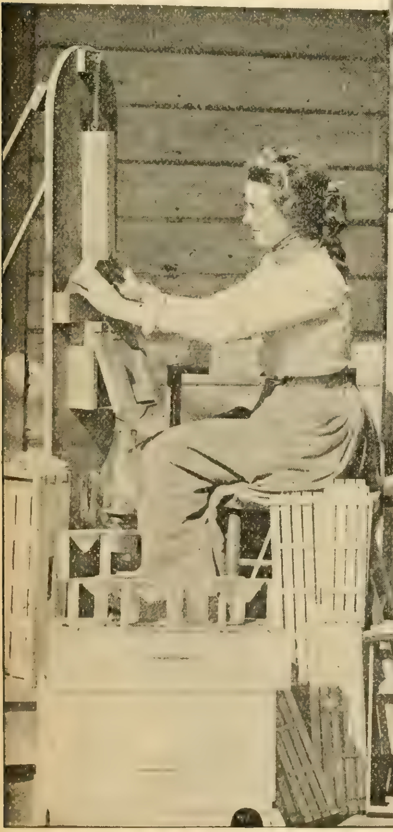


FIG. 2.—MISS MAUDE RICKE IN THE ACT OF FOLDING.

[This appears to be a good machine. It is certainly better than *some* of the so-called combined machines; but whether it is equal to or better than the others, I can not say. We have been experimenting with quite a number of late, with a view of adopting one for ourselves, but as yet have not quite decided. Some good points are made above, to the effect that the section has to be handled but once; for that matter that is true of any combined (two in one) machine. But our man says that, for quantity of work, we can beat any of them with two separate machines. While that may be true, because he is used to their handling, the *average* person would do more rapid work with a combined machine.

I should be glad to have you tell us further of Mr. Ricke's invention, especially of that solar wax-extractor; and don't forget to send along some more good photos. From those in hand it is plain that Mr. R. should be (no doubt is) proud of his machine, and, and—its operator.—Ed.]

SUPERIOR BREEDING-QUEENS.

Why the Queens of some Breeders do Not Come Up to the Advertised Qualities; Controlling the Parentage of Both Sides; Another Record-breaking Queen.

BY J. F. M'INTYRE.

I have never advertised queens for sale, but have bought queens from every breeder in this country who claims to have anything superior, and I am sorry to say that I am generally disappointed. Why is it that we are so often disappointed in buying the daughters of a queen claimed to be very superior stock? These daughters should be all that is claimed for their mother, and we are disappointed if they are not.

There are several reasons why the young queens may not be as good as we expect from reading the advertisement. First. The claims may be exaggerated; but I have charity enough to think that this is not where the trouble generally comes in.

Second. The young queens may not be as well reared as their mother was. I believe this is true in about ninety-nine cases in one hundred. We find a very superior queen in the apiary, probably raised under the superseding impulse, and start out to duplicate her by starting a large number of cells from her larvæ in a queenless colony, or in a super above a queen-excluder, which is about the same thing, as the bees regard that part of the hive as harmless; and the result is a lot of queens below the average in quality. To duplicate your fine breeder the young queens must be reared as close to nature's best way as possible. The Doolittle cells placed in the middle of a brood-chamber, where the colony is superseding its queen, or preparing to swarm, gives the best results in my hands, and the superseding colony is the better of the two.

Third. The young queens may not have married as well as their mother, and their children may inherit a lazy disposition from their father. As in the human family, this is a hard matter to control, but it is best done by raising an abundance of drones from an equally good queen in no way related to the one you rear queens from, and by killing inferior drones.

Fourth. Queens are often injured by long confinement in the mails, especially if they are laying rapidly when caged and shipped. When a queen comes out with a swarm she is in the best possible condition for a long journey by mail. The ovaries are then small, and not so liable to injury as when they are large and full of eggs.

Larger cages should be used for shipping valuable breeding-queens. The export Benton cage is none too good to mail a breeding-queen from the East to California, and the long-distance Benton is about right for all others.

This subject of superior stock is now the most interesting to me of any connected with the bee business.

I am interested in the statements made by Mr. Wright, on page 829, about a queen which he calls "Sweetheart," and would pay fifty cents more than the regular price paid for one of her daughter's select tested, and one dollar more if the young queen was reared in a colony superseding its queen and mailed in an export cage; and if you could insure her mating with a drone from as good stock as herself, which would make the young queen as good as her mother, you might add another fifty cents. Seven years ago I bought a queen from a man named Wallace, who advertised that he was raising queens from Dadant's best stock. I raised about twenty queens from this one to test the stock. The next season was a dry one, and most bees had to be fed to keep them alive; but several colonies out of the twenty filled their supers with honey. Next season, 1895, I bred from the best of these; and in 1896, which was another dry year, this strain again filled their supers when others were starving. I have had many colonies of this strain which I considered ideal bees, and think that they have been improved by breeding from the very best each year. The present year was a very dry one, but I have one colony of this strain that filled 2½ ten-frame L. supers; and I wrote in my record-book, after the number of this hive, that such bees would make a man rich. They are beautiful, pure Italians, light three-banded, queen large and yellow, and very prolific. I have raised about 200 young queens from her, and they are all like their mother. Her bees are gentle. She was one year old last July, and has never swarmed; and this strain does not swarm half as much as any other strain in my apiary. It is rare for me to become enthusiastic over a queen; but when a colony shows a marked superiority over 600 others in the same apiary, it is a rare thing.

Fillmore, Cal.

[You have very fairly and candidly set forth some of the reasons why queens of good mothers do not equal the original stock. It is true, that some of those (not all) that travel long distances in mailing-cages do suffer more or less from confinement, exposure, and rough handling; and that is one reason why I have been urging every honey-producer to learn to rear his own queens by the Doolittle method; and while referring to that method I agree with you, that those reared under the swarming or supersedure impulse are much superior to those reared by the other plans. A colony that is about to supersede its queen we consider a prize; and if we can get four or five of them, we feel that we are in clover. But, of course, when we have no such colonies we use the next best—i. e., bring about the swarming impulse artificially by feeding a little every day; but even then an actual honey-flow is ahead.

With regard to your breeding-queen, the one that has made such a fine showing, we hereby give you an order now for three of the best of her daughters, if you will sell them, to be sent next summer, you to set your own price. We would make you an offer for the breeder; but, even if you accepted, by the time she arrived here through the mails she might be almost worthless as a breeder, especially if she were getting to be old, and it would not be wise to take chances on such a queen.

Yes, sir; when one colony shows such marked superiority over 600 others in the same apiary it is indeed a rarity, and that queen is a prize. I hope you will supply other breeders with your stock as well as ourselves, for the time is surely at hand when better honey-queens rather than better colored ones should be sought.—ED.]

TALL SECTIONS.

How to Get Bees to Take the Honey out of Supers; Smoker-drippings, and the Remedy.

BY J. E. CRANE.

My Dear Ernest:—I have been wanting to write you for a long time on several matters; and as this is the season of mince-meat, perhaps it would be a good time.

1. In regard to the use of separators with projections, a year ago you thought you might be able to introduce them this winter. I had hoped that the past season I might be able to prove very conclusively their value; but the season was one of the worst I have ever known, my bees averaging but one pound of surplus per colony; yet these separators with projections have given very satisfactory results. I think as large a proportion of sections were sealed up and down the sides as I have had for many years, although I did not get a single clamp finished. Still, under the circumstances I think it would be better to leave the matter for another year, when I shall be able, I hope, to speak more positively as to their value.

2. On page 766, Oct. 15, Louis Moll speaks of using sections 4¼ × 5¼ × 1¼ as I had some time suggested as being quite too thin. I think I must have had in mind plain sections. I made several thousand last winter 5 × 4¼ × 1¼ plain, and they prove very satisfactory. I have just weighed five such; and although not perfectly filled they averaged 14½ ounces in weight. A plain section 1¼ thick is almost exactly the same as 1⅝ with a bee-space.

3. I see you and Dr. Miller have a good deal of trouble in getting the bees to take the honey out of sections in a super. Now, the way to do it is to uncap all that is capped, either with knife or by scraping the cappings, and laying the combs down flat instead of in a natural position, then bees will quickly remove the honey. However, I think where one has many unfinished combs the best way is to uncap and put them into the extractor and then give to the bees to clean up.

4. In regard to the smoker dripping, I long ago learned that, in the burning of wood, either wet or dry, a large amount of water is generated. A large part of dry wood is composed of oxygen and hydrogen, and in combustion these unite, forming water. If you lift a griddle of the kitchen stove soon after starting a fire in cool weather you will find the under side covered with moisture condensed by the cold iron. We shall also find, where a stovepipe extends a long distance, or through cold rooms, a tendency to drip. The dripping of smokers will be found much worse in a cold day, or in a damp cloudy day, than in clear warm weather. If you use dry fuel, of course there will be less than when damp fuel is used. So far so good. But this is not a complete remedy. If the inside of the smoker is well lined with soot it helps; but even this will sometimes fail.

The only complete remedy, so far as I know, or at least the most practical remedy, is to make a hot fire in the smoker when troublesome, and then the heated air does not readily condense on the inside of the smoker. A cubic foot of air at 10° Fahrenheit will hold $\frac{8}{10}$ of a grain of water in suspension. If the temperature is increased to 30° it will hold 2 grains. If raised to 70° it will hold 10 grains, and at 100° 19 grains, and at a temperature of 212° many times this—if I remember correctly, several ounces. The ability of the air to hold moisture increases very rapidly as the temperature rises. From this will readily be seen the advantage in damp or cold weather of having a decidedly hot draft through the smoker, thus keeping the sides of the nozzle warm, and the smoke and air hot enough to hold all the moisture generated or given off in combustion.

In the Dec. 1st issue of GLEANINGS Dr. Miller has a Straw relating to a new linden — *Tilia petiolaris*, two weeks later than other lindens. Does this mean that it is two weeks later than the American or European linden? The American linden blooms about two weeks later than the European.

Middlebury, Vt., Dec. 5.

[I should be glad to hear more about these big sections. They must look like great slabs of honey. Better not send any of these around in Danzenbaker's territory or he will be around after you with a sharp stick, for his 4×5 would have no show.

I have tried laying combs flatwise on the brood-frames, and I now remember that the bees did take the honey out of them; but as it would be a great deal of work to take the sections out of supers and lay them down, perhaps the best way is to let the bees rob them out, as explained in Straws in this issue.—ED.]

RAMBLE 180.

Rambler's Inventive Genius at Work; How he would use Hypnotism in place of Smokers for Bees.

BY RAMBLER.

"Well, Rambler," said the boss as we sat at ease in his cabin, "you seem to be doing a land-office business in the line of improvements. Your head must be full of them. Now suppose you tell us about the next thing we may expect."

"There, now, Mr. Boss, you have no idea that I am going to reveal the workings of my genius? Then I am sure if I should you would meet them with words of doubt and derision. Now, here is Mr. Gabfast; he and I have been comparing notes. He also possesses a great amout of genius, and has an idea in his head that is worth looking after."

"Hey? how is that, Mr. Gabfast? If you have any thing new, give it to us," said the boss.

"Oh! I am not giving away ideas any more than is the Rambler; but, after all, as the idea does not give away the construction of the thing, I have no objection to state the bare idea. I have in mind a practical machine for uncapping honey."

"Pshaw! is that all?" said the boss. "Why, I have studied that matter myself in all of its phases, without tangible results; and if *I* could not invent it I am sure *you* can not. It can not be done, Mr. Gabfast; then if it could be invented it would soon be worthless, for the tendency of the times is to extract the honey before it is capped. Why, Mr. Gabfast, your time and your money are all fooled away in the study of it."

"See here, Mr. Boss," said I; "you are altogether too extreme in your conclusions. The tendency is not for extracting honey before it is capped. If so it is a tendency for thin unripened honey. It is an uncontrovertible fact that honey ripened in a tank is not equal to honey ripened in the comb in the hive; and if the general run of bee-keepers adopt the non-sealing plan, our product will not command the favor it has in the past."

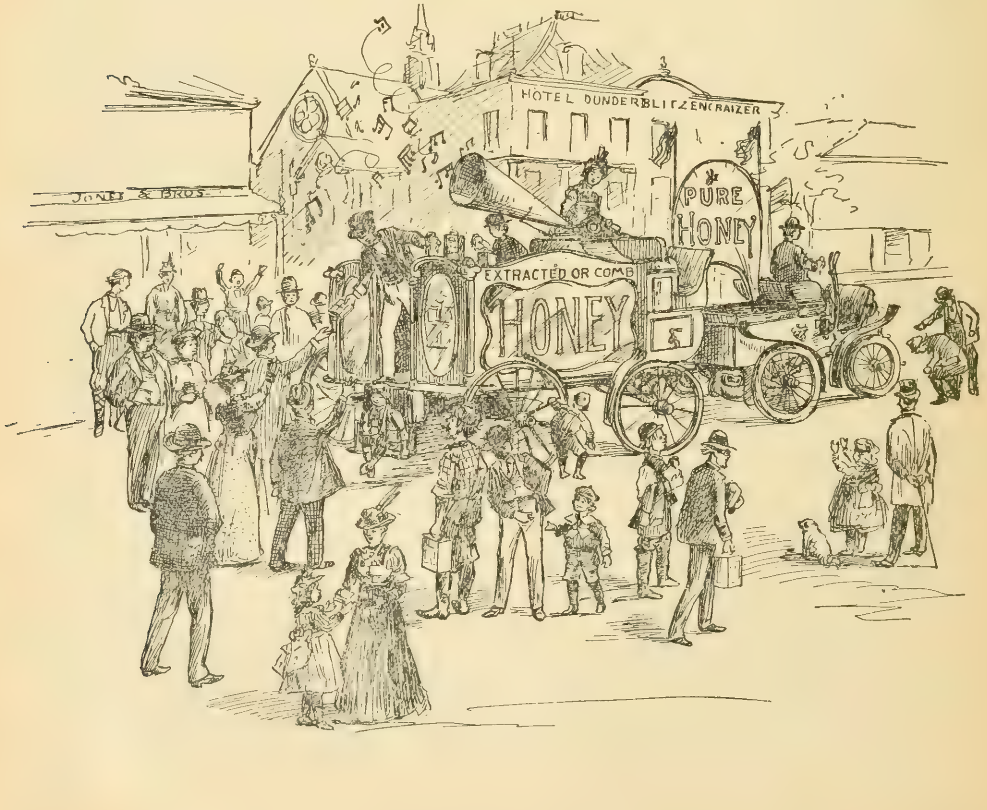
"Them's facts," said Mr. Gabfast, with a beaming smile toward me. "The more I keep bees, and the more honey I extract, the more I want it sealed, and the more I need a good uncapping-machine; and just because I am driving a team during these poor honey seasons it is no sign that I can not invent new machines. I'll show you, Mr. Boss, that my genius is not to be sneezed at. Do you *sabe?*"

"Oh! well, if you fellows are going for me in that way I'll take off my coat and argue it to the end. I never give up in such matters. Do *you* sabe?"

"Yes, we sabe," said I; "we have no desire to argue; it is unprofitable business; our works hereafter will show our position; but now as we have gotten into the comparison of ideas, let *me* give one. I believe the day is coming when the smoker will be an obsolete tool in the apiary."

"You don't say so, Rambler? Why, how are you going to subdue the pesky bees without smoke? Is it gas, anesthetics, odors, or what?"

"None of them, sir, but purely science. You know the tendency of the times is to the annihilation of time and space, and man is just learning to understand the wonderful possibilities of his mind. The day will come when the bee-keeper can approach the hive and make a few passes over it, and the bees will become as tame as flies; and in order to introduce a queen, just make a few passes, and



both bees and queen when put together will immediately meet in harmony. In other words, we will hypnotize instead of smoke bees."

"Ha, ha, ha! Why, Rambler, ha, ha! why—ha, ha! what a cranky idea! Why, Rambler, you have more cranks and wheels in your head than a thrashing-machine. Say—ha, ha! I'd like to have you try some of your passes upon *my* bees. Say, Gabfast, don't you think that is the most outlandish idea you ever heard of?"

"No, I don't," said Gabfast. "I believe the Rambler is right in his deductions. In these days of great discoveries, the thing that seems a chimera to-day becomes a working fact to-morrow; and then Rambler has good authority to back him."

"Well, I'd like you to quote your authority. I believe I have read all the works upon bee-keeping that are worth reading, and have never found where hypnotism was ever mentioned for the management of bees."

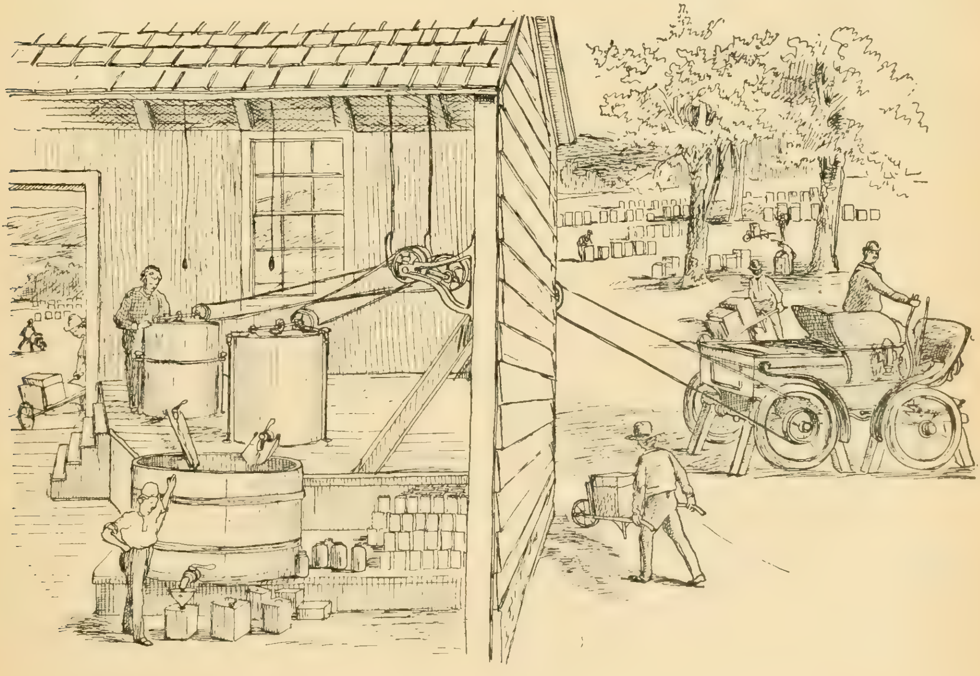
"Well, I will quote from one of the oldest bee-books extant," said Mr. Gabfast. "'The sucking child shall play on the hole of the asp, and the weaned child shall put his hand on the cocatrice's den.' Now, the bee is not mentioned; but it is implied that the venom of the bee will not be used; hypnotism and suggestion will rule in that day. Oh! yes, Mr. Boss, the Rambler is right. You didn't know he was a hypnotist, did you?"

"Well, no," said the boss; "but I might have known it; seems he did not ride with you for nothing last night. He seems to control you."

"Now, my dear boss," said I, "in order to prevent our conversation taking a personal turn I will launch another idea at you. The proposition is this: *The automobile will revolutionize the bee-keeping industry.*"

The boss and Gabfast were both silent for a few minutes. I didn't know but the idea had overwhelmed them; but utterance was soon given them, and they both expressed themselves as favorable to the automobile for the moving of bees or in any other work around the apiary where horses now are used; but as to revolutionizing the industry, the boss thought that was another wheel in my head. "But give us a few more of your ideas upon the matter," said the boss.

"As you have said, gentlemen, the automobile will supersede the horse in the moving of things to and from the apiary, and every thing in and around the apiary; in fact, it will enable us to get around among the hives if we need to. The first requsite will be to locate the apiaries near to good roads; and now that the automobile has arrived, the good roads will soon follow. We can now save time over the horse on our bicycles, and the automobile will enable us to save time with our loads of fixtures. We can even fix to move bees rapidly to out-locations when desirable, also to move honey to market. And you know that many bee-keepers have time and genius to make their own hives and fixtures. Jack up the automobile so that the wheels will not touch the ground; now attach an adjustable pulley to one of the wheels, and the power can be used to run a circular saw or any other light machine. When not used for sawing, the pulley is quickly taken off, and the automobile will be ready to use for its original purpose. In colder portions of the country where the auto-



mobile would stand idle for many months in the year it could be used to advantage in running not only the saw but the washing-machine, churn, or sewing-machine. Then, Mr. Boss, it will readily occur to you that, when the extracting season arrives, the automobile can be run up to the honey-house, and the power attached to the honey-extractor."

"Yes," said Mr. Gabfast; "and you don't want to forget to attach a belt to my uncapping-machine, for that will run with a pulley."

"Glad you spoke of it. All these machines help: every thing that enables us to work with rapidity reduces the cost of production. With the automobile for power, a greater amount of honey could be thrown out in a day, and with less help. Then to avoid lifting cases and barrels of honey a crane could be so arranged as to use the power from the automobile. Bee-hives, when moving an apiary, could be handled the same way."

"Well, I declare!" said the boss; "that vas vone grand schemes," and he enthusiastically sang:

> "I ish one of dose happy bee mans,
> I don't got to vork any more;
> I loafs all day on der apple-dree shade,
> And shmokes mine pipe on der door."

"Hurrah for the automobile!"

"Say, boss," said Mr. Gabfast, "I saw the Rambler make a pass at you a few moments ago—guess you are under his influence, hey? I didn't get so far off my base as to sing Dutch."

"Now, gentlemen, do not get too enthusiastic. I have another good feature, better than all the rest. Now listen. When the honey season is over, and we wish to sell our honey for a good price, fit up a real nice ornamental truck having glass sides; fill this with a nice lot of honey; trail it behind the automobile, and circulate with it through the streets of your towns, both large and small, far and near, until you dispose of all of your honey; then speculate a little and sell honey for those who can not run an automobile. The chief drawing feature about this honey-wagon is the phonograph or gramophone mounted on the top. Let the gramophone do the talking and singing while you hand out the honey for the dimes. A gramophone arranged to sing that Dutch song that you have just been singing, Mr. Boss, would be extremely appropriate; and, say, wouldn't it draw a crowd?"

"Ha, ha! I should say it would," said the boss. "Why, just the automobile itself would draw a crowd; but then I suppose they will soon become so common that they will attract but little attention. I will vote for the gramophone. They are always in order, for they can be made to talk and sing something new and to the point."

"You fellows can have your gramophone if you want it; but as for me I have done all of my own talking so far, and feel perfectly well qualified to do it yet," said Mr. Gabfast.

We both agreed with him on that score, for we believe he could tire out a gramophone any day.

"But, Rambler," said the boss, "I have found one serious objection to the automobile, and that is the expense."

"I am aware of that; but you know that, a few years ago, we could not purchase a bicycle for less than a hundred dollars, while now we can get a very good wheel for $25. It will be the same with the automobile. It is my opinion that a good machine propelled by gasoline, suitable for the bee-keeping fraternity, will shortly be built for $200."

"Gentlemen, I am heartily in favor of the bee-keepers' automobile," said Mr. Gabfast; "and I move that we petition the A. I. Root Co. to find us such a machine; and if they fail to find one, manufacture it themselves."

The boss seconded the motion, and it was unanimously carried, and the A. I. Root Co. are notified to govern themselves accordingly.

Our meeting broke up with a hurrah for the automobile, and Mr. Gabfast went to his blankets in his wagon, singing, "I ish one of dose happy bee mans" And who wouldn't be a happy bee keeper with such a bright future ahead?

ANSWERS TO SEASONABLE QUESTIONS BY G. M. DOOLITTLE

SOMETHING ABOUT CELLAR WINTERING OF BEES.

Question.—This being my first experience in wintering bees in the cellar, I am not sure whether they are doing as well as they should or not. Will you please tell me how bees should appear, to be wintering well?

Answer.—This used to be a point which bothered me considerably when I first began to winter bees in the cellar; and had it not been for the instructions on this subject given me by Mr. Elisha Gallup, in the *American Bee Journal*, and privately, I might have made many more mistakes than many beginners now do. In the first place, when hives are placed in the cellar they should be raised at least two inches from the bottom-board. As the years go by, I am led to believe more and more that this was one great reason I did not succeed better in my first efforts in wintering bees in the cellar; for at that time I almost invariably left them down on the bottom-board as in summer, and often with the entrances nearly closed, for it was thought then that something must be done so as to keep the bees in the hive during their sojourn in the cellar. But, to the question: "How do I know when the bees are wintering well?"

To best illustrate I will give something which happened some years ago, as I have it in my diary. A neighbor called to see how the bees were wintering, and to know how I fixed them and the cellar. I told him that my bees in the cellar were wintering well, as I considered it—in fact, I had never had them appear so nice and quiet as they were then appearing that winter in the cellar. After some little more conversation I asked him if he would like to go into the cellar, to which he answered that he should very much, but said, "I suppose you do not go into the cellar from the time the bees are put in till you take them out, as I see it advised in some of my papers that it is not best to do so." I told him that I went into the bee-cellar whenever I wished so to do, and I did not consider that any harm resulted therefrom; and I am now sure, after more than a score of years of cellar wintering, that no really scientific wintering of bees can be done where no observations are ever taken.

As we were going into the cellar a conversation about like this took place, which I will give, as that will help the questioner to understand that which he wished to know better than I could do it in any other way.

"What! have you four doors to go through to get in?"

"Yes, these four doors inclose three dead-air spaces, so that the cellar is kept at a more even temperature than could possibly be obtained in any other way, and the temperature is the main thing to be looked after in cellar wintering, after the bees are put in. Now, before we open the last door I wish to say that we must be careful not to jar any of the hives or breathe on the bees, for we should be as careful not to disturb them as possible."

"What is that low murmuring noise I hear?"

"That is the contented hum of the bees in their winter repose, and you can always know that they are wintering well when 60 to 75 colonies make no louder noise than you now hear."

"But I supposed from what I had read that bees, when wintering well, gave no sign of life, not even any noise."

"In this you are mistaken, for I have never seen bees in such a dormant state but that they could stir to a certain extent—enough to give off a loud buzz when the hive is suddenly struck, or to thrust out the sting if they are breathed upon."

"Hark! there is a bee flying. Do they fly out here in the dark?"

"Yes; that is only a bee ready to die of old age; and as instinct prompts the old bees to leave the hive to die, when the temperature will permit it, this bee is only obeying nature's law in flying out. See! here are quite a few on the floor, but not nearly as many as is the average in most winters. I often come in here in the dark, and listen for these old bees; and many times before, in previous winters, from two to five would fly out while I was slowly counting 100; but this winter scarcely more than one comes out while I am counting from four to six hundred."

"What have you on the floor here—sawdust?"

"Yes, every two or three weeks I bring in a bushel or so of fine dry sawdust, such as I make when running my saws in the shop, and scatter it on the floor. This sawdust will absorb almost its bulk in moisture, so I leave it here to keep all as dry, sweet, and nice as possible. Before I used this the dead bees on the floor would mold and smell badly; but now all smells sweet and nice, very little mold ever appearing."

"Here is your thermometer. I see it marks 45°. What are the extremes of temperature in here?"

"From 43 to 47° above zero after the first few days when the bees are put in. The arousing of the bees in putting in, causes them to maintain a slightly higher temperature for a few days, up to 48 to 52°, but it soon subsides to where you see it now."

"What! doesn't a warm spell in winter, or a long cold spell, have any effect on the temperature in here?"

"No; and a cellar that allows the outside temperature to affect to any considerable extent the inside I have always considered as faulty. You will notice that there is a roof of stone over here. On top of these stone there is three feet of dry earth, and a board roof over the whole, which, with the four doors, is conducive to an even temperature. Now step up and look at those yellow fellows as the cluster hangs below the bottom of the frames nearly a fourth as large as the crown of your hat. And, again, look at them as I roll back the quilt at the top. See! they go from the bottom to the top of the hive."

"Why, Doolittle, they are dead."

"No, I guess not."

"But they don't stir."

"Let us breathe on them the least bit."

"They are alive, that is a fact. Do they always keep thus quiet?"

"I have never seen them more uneasy this winter; but some winters the light seems to arouse them, when I let it shine on them from below, and they will stir around considerably at the top when the quilt is lifted."

"Where are your ventilators? The piece I read said it was necessary that the cellar be rightly ventilated at all times."

"When I built this cellar I had a sub-earth ventilator 100 feet long, and an upper ventilator to match, but I gradually began closing them till I finally kept them shut all of the time, and I could not see but the bees did equally well without them; so when I remodeled the cellar they were left out of the plan altogether. Enough air seems to come through the earth and mason work, together with the doors, to supply all their needs."

"Well, I should not have believed that the air would keep so pure if I had not come in here and tried it for myself."

"We will go now; but first notice that the bees are nearly, if not quite, as quiet now as they were when we first entered, a quarter of an hour ago. If our entering does not disturb them more than this, why should I not have the privilege of coming in here as often as I think I can benefit them by so doing?"

In the above I have tried to make all plain to the questioner. If I have not done so, if he will tell me wherein I will try again.

[Doolittle's bee-cellar is illustrated in the A B C of Bee Culture, under the head of Wintering. It is a repository entirely independent of any other building above. The trouble with the average house cellar is that the walls above ground are too thin, and as a result outside temperature does have quite a decided effect on that inside.—ED.]

HEADS OF GRAIN FROM DIFFERENT FIELDS

[I solicit questions for this department; but they must be put on separate slips of paper, and marked "GLEANINGS Department." If you desire an immediate answer, say so at the time of writing, and a private reply will be sent you in advance before your question with answer appears in these columns; but questions that are mixed up with business matters, will not only be subject to considerable delay but possibly will receive no answer at all.—EDITOR.]

PROSPECTS ENCOURAGING FOR NEXT YEAR.

November was very warm and pleasant, and bees carried water until the last day of the month. Dandelions and strawberries bloomed. If late rearing of bees is indicative of successful wintering, we may have no fears for the future.

The crop of surplus honey was light, but the lower stories were heavy with well-ripened stores and plenty of bees. There was a very small amount of white-clover honey secured in this locality—mostly Spanish needle and other fall flowers. Comb honey retails for 20 cents per section. MRS. L. HARRISON.

Peoria, Ill., Dec. 14.

FOLLOWERS IN TEN-FRAME HIVES.

In the use of your ten-frame Dovetailed hives, is it the general practice or intent to use the follower in addition to the ten frames? Seems to me the follower would cause too tight a fit. If the follower is not used, I presume the two outside frames are spaced equally from their respective sides.

Ashland, Or., Dec. 6. E. A. HILDRETH.

[As the ten-frame hives are made, they are wide enough to hold 10 Hoffman frames spaced 1⅜ in. from center to center, but not a follower at the same time. But the latter is sent along so that, when less than the regulation ten frames are used, the follower may be used to reduce the capacity of the hive.—ED.]

HONEY FROM PINE-NEEDLES THE MOST SALABLE.

The most salable honey I ever tried to sell was some gathered from pine-needles in May, 1898. Some of my best colonies began work in the third super at that time. When basswood and cotton-blossom honey was offered, later in the season, some of my customers refused to buy unless I could supply them with "May honey."

Let us have the reform in spelling, then the metric system of measures and weights.

J. T. ETHEREDGE.

Delray, Tex., Dec. 9.

POOR COMB HONEY ON A PAR WITH THE FANCY ARTICLE.

If E. R. Root could see some of my sections I suppose he would class me with the "farmer-bee-keeper." Now, I don't think that E. R. is sitting at his desk polishing his finger-nails, waiting to hear from me, so I will just say, that, in this part of the country, we are paid 9 or 10 cents per section, no matter whether the wood is white as snow or black as ebony. I have tried snow-white sections, and colored cartons, to make an attractive package easily handled by the merchant, but I could get no more for it than the man who brought his honey in an old tin can. J. A. RUFF.

Fort McKavett, Tex., Nov. 30.

SIX THOUSAND DOLLARS CLEAN PROFIT FROM THE BEES.

I was in the bee business eight years, and received much valuable information from GLEANINGS that helped make my business a success. I commenced the business without knowing any thing about bees, and was in the business eight years, and cleared $6000 in that time, after paying for the bees and all the supplies and labor hired. I liked the business, and it paid well; but I got to be 65 years old, and two years ago I sold my bees, as I had 1000 acres of land in cultivation, and 500 head of cattle, and am a director in the Poudre Valliy Bank. I did not allow my bees to swarm. I took out the queens in June. I ran about 260 stands the most of the time.

N. C. ALFORD.

Fort Collins, Colo., Nov. 20.

[This illustrates the fact that, if one can make money keeping bees, he can make money at other things. The Coggshalls make bees pay as well as every thing else that they have a hand in. This is a better record than many are able to show who run bees as a sort of side issue, as I take it our friend above did.—Ed.]

WINTERING BEES IN THE TEMPERATURE OF A LIVING-ROOM.

1. Is it possible to raise bees in a temperature of 70° throughout the winter, with a small enclosure on front of hive, 2 feet long?

2. Can I raise young bees by doing so? And if I can, what can I substitute for pollen in the hive? This is an experiment on my part, partly because I haven't a full swarm.

CHAS. E. SELCHOU.

Port Chester, N. Y., December 6.

[1. It is possible to winter bees in a temperature of 70° throughout the winter, but it is not practicable, and losses from bees flying out are very considerable. Much better results can be secured by putting bees in the cellar, where they will get into that semi-dormant state when they will consume very little stores.

2. Yes, you *can* raise young bees, but this also is not practicable. If you wish to carry on experiments for the purpose of observation and study, put a colony in a greenhouse, where the bees can get natural pollen; but even then many of them will die by bumping against the glass; but in time some of them begin to learn that they can not get through the glass, and make their way back and forth to the hive. The whole trouble with wintering bees in a temperature of 70 degrees, and yet giving them an entrance to the outside, is that too many of them fly out and die; but if it is cold, and they have to hug up to the combs, they will not then fly out.—ED.]

EDITORIAL BY E. R. ROOT

WE are having good stiff winter weather; and if it should continue long it would be rather hard on outdoor bees.

THE steady increase in our subscription-list is seen by an equal increase in our advertising. This is as it should be.

DOOLITTLE has a seasonable and valuable article in this issue for one who is just trying his luck at wintering indoors. To know when bees are wintering well in the cellar in spite of appearances to the contrary, is important.

SECTION-PRESSES and foundation-fasteners, either singly or combined, are getting to be very numerous. Many are good, and just now we are trying to decide which ones, from the point of economy and efficiency, are best.

MR. LEAHY, of the Leahy Mfg. Co., of Higginsville, Mo., writes that he has just completed arrangements with James Heddon, of Dowagiac, Mich., for the manufacture of his divisible-brood-chamber hive. Those interested can obtain these goods of Mr. Leahy or of Mr. Heddon.

ANSWERS TO QUESTIONS.

DURING the coming year more space will be given to answers to questions; but those who send in all such must not expect immediate replies, nor that the same will be published in the "very next issue." The questions should be separate from matter intended for the business department, written in good clear hand, and numbered. Those that are not of sufficient importance to the general reading public will be answered privately. Indeed, we answer scores of letters almost every day that have no reference to business, but are simply designed to help out beginners.

REQUISITES FOR INDOOR WINTERING; TEMPERATURE; WARMTH OF MOTHER EARTH; FOOD; VELTILATION; SUB-EARTH VENTILATORS DISCARDED.

IN the November *Review* appears quite an extended article from the editor, on bee-cellars and their construction. After referring to the fact that the majority of bee keepers in northern climates have found that indoor wintering gave better results than the outdoor, and that it is cheaper to gather a lot of hives together under one general protection than surrounding each individual colony by some material that is a poor conductor of heat, he goes on to say that a cellar of itself does not create warmth; but by being close to Mother Earth it derives heat from that source, and that an up-ground building can be made a success only when a large number of colonies can be placed in it; because the bees themselves will then be able to generate considerable heat. He then states the gist of the matter in the following sentences:

> This whole question of cellar wintering is one of temperature. Don't understand me as saying that temperature is the only thing to be considered in the matter of successful wintering, as there are several others; among which is that most important of all—food. What I mean is that ventilation and moisture have but little bearing only as they affect temperature. In a dry atmosphere bees can endure a much lower temperature than they can in a damp atmosphere.

It is well known that outdoor colonies will stand a greater range of temperature than those confined in the cellar; and the only reason I see why this can be true is because the outside air, when it is very cold, will of necessity be very dry; that is to say, the outside temperature of frozen air, even down to zero, with a dry atmosphere, will probably be no more destructive to bee-life than the inside temperature in the cellar, where there is a large amount of moisture, down to the point of 35 or 40 degrees Fahr.

Say as much as we like, cold is the principal agent that causes dysentery. Bees never stain their hives up in warm weather; and an apiary badly attacked with dysentery will be cured just as soon as warm weather sets in; but when we admit that cold is the prime cause of dysentery we must also admit that moisture, an excess of it, has a good deal to do with the matter; but an excess of dampness alone, if the temperature can be controlled at the right point, will not cause winter losses.

REQUISITES FOR INDOOR WINTERING.

We have had reports of how bees wintered successfully in cellars reeking with dampness, with water on the cellar bottom. Indeed, almost every good bee-cellar has more or less moisture arising from the breath of the bees that collects on the stone walls or on the stone roof if there is one. And, again, bees have wintered very successfully with windows closed tight with scarcely an inlet for fresh air.

There was a time when sub-earth ventilators were considered quite necessary to the successful working of a good bee-cellar; and for the benefit of our new subscribers I will explain these were nothing more nor less than wooden pipes about a foot square, or tile or sewer-pipe, running under ground for a distance of 100 or 200 feet, one end of which communicated with the outside air, and the other end with the cellar. The theory of a sub-earth ventilator was very plausible. The outside air at a zero temperature, it was argued, would enter the duct, where it would be warmed in its passage under ground to the cellar, up to about 40 or 45 degrees, which, on entering the cellar, would not chill the bees like the cold air directly from outdoors in the usual way.

Notwithstanding the fact that a good many sub-earth ventilators were made twelve or fifteen years ago, we hear very little about them now; and yet bees winter better nowadays than they did formerly when their owners thought they knew all that was possible about bees. They did not realize the force of Josh Billings' question, "What's the use of noin' so much when so much you no ain't so?"

But sub-earth ventilation, when *intelligent-*

ly used, may be productive of good results. Dr. Miller is one of the few who are believers in such ventilators, and would not under any consideration dispense with them. In each of his cellars he uses a small hard-coal stove, and when the bees become noisy, as a result of low temperature or bad air, he starts a fire, thus causing fresh air to be sucked in at the sub-earth ventilator. After the building of a small fire a circulation of air is begun, and the bees soon quiet down. How much of this is due to the fact that the temperature was too low, or to the fact that the air was foul, or to both, no one can state definitely.

It follows, then, if the sub-earth ventilator, when used intelligently, is a good thing, when handled carelessly it may be worse than nothing. Under some circumstances it is easy to see how it might bring in too much cold air, and reduce the temperature below the point of good wintering—down to, say, 40 or even 34. Under other circumstances it may be the means of causing drafts; and whether or not bees are affected by such things as are human beings, is not easy to say. But certain it is, there is some combination of circumstances resulting from the use of sub-earth ventilators that is not always attended with the results looked for.

Bees have been wintered successfully in up-ground repositories as well as below ground. The former will have an advantage in the way of dryness, but will have extremes in temperature, because Mother Earth will not be able to impart her heat to the room in which the bees are. But if the up-ground structures have a large number of colonies, the inside heat generated by the bees themselves, as Mr. W. Z. Hutchinson says, may be sufficient to keep up the requisite temperature. But, say what we may, it stands to reason that the up-ground buildings will be subject to a greater variation of temperature than those under ground.

The temperature of Mother Earth is somewhere in the neighborhood of 45 or 50 degrees—at least in this locality. I have run thermometers down in different wells all over our town. The thermometers were placed in a pail, the pail let down into the well and into the water. It was then raised and lowered for the purpose of changing the water so that the thermometer would be brought to the exact temperature, or as near to it as possible, of the water in the well. The pail was then raised, and a reading taken off immediately. This was tried on, I think, some six or eight different wells in this town, with the result that the temperature varied anywhere from 45 to 50 degrees. During the following summer I took further readings, and found that the coldness of the water of these same wells remained practically the same, thus proving that snow and ice above ground had very little effect on the earth 20 or 30 feet down. But water from soft-water cisterns varied greatly. Sometimes the water was very near the freezing-point in winter, and in summer it was away up to 65.

If our winter repositories could be down in the ground some 20 or 30 feet, we should be able to get a temperature that is almost uniform throughout the entire winter. But that, of course, would be out of the question. The nearest we could arrive at such a point would be found in some cave that runs down into the bowels of the earth some 30 or 40 feet.

If we assume, then, that absolutely uniform temperature, dryness, and good food, will result in good wintering, then a deep cave under ground would be an ideal place. But only one bee-keeper in about ten thousand would be able to find such a cave on his farm or probably in his vicinity, so we should have to consider that scheme as impractical. But a deep cellar under the dwelling-house, having a packed double floor above, with a porch running around the cellar, might possibly hold a temperature of 45 degrees. See Doolittle's article in this issue.

THE COLORADO STATE BEE-KEEPERS' CONVENTION; SUPPLIES, FROM THE STANDPOINT OF WESTERN BEE-KEEPERS.

AFTER I had come to the decision that I would attend the Colorado State Bee-keepers' Convention, I wrote to Sec. Rauchfuss my intention. In acknowledgment of my letter he said he was glad to know I would be able to attend, and that he *thought* I would find this visit pleasant and profitable. What he meant by "pleasant and profitable" I did not quite understand; but from some other references in the letter I suspected that the words had a sort of sinister meaning. Well, when I arrived at the convention, and heard part of the discussions, I concluded that the members thought that this was a good time to give "Bro. Root" and other supply manufacturers a little "shaking up." I was quite prepared to take my medicine, either good or bad. With knowing winks and significant glances they first began by giving me homeopathic doses; and when they found I rather enjoyed it, and that I came there for the express purpose of assimilating, and that I would consider the giving of bad as well as good medicine as a friendly act, they gave me larger doses — more on the allopathic order. I told them to "fire away," and when they had got all through I would "have my say," providing there was any thing left of me. This invited a bombardment, to change the figure, which then commenced.

First, the brood-frames sent out by Bro. Root varied in length. Some of them liked Hoffman frames, and some didn't. Some of them were decidedly opposed to having the top-bar shortened. When I got down to the gist of the whole matter I found that it was not the frames, but the hives, that varied. The frames were of the same length, because I compared those made by us and one of our competitors. But here was the trouble: Some of their hives were longer than those made by ourselves, by ¼ inch, with the result that the brood-frames made by either of us had a fashion of dropping down in such hives, because the top-bars were hardly long enough to bite on to the rabbets. So far the Root Co. were clearly not to blame. Next they scolded about covers that were too short, and that were made by Bro. Root too. Right here I had to acknowledge the corn, for there was no loophole bigger than the eye of a needle out of which I could crawl; and I didn't try the act, for it had transpired that one of our workmen, mistaking one of our orders, made covers ⅛ inch *shorter* instead of that much *longer;* and, worse than all, nearly all of this lot, before the mistake was discovered, went to Colorado.

One good brother got up and said he could not see any sense in having no-drip cleats in shipping-cases. Another arose to his feet and said he thought this feature was the best improvement that had been made in this line for some time. Still another supposed that the cleats were to cover the edges of the sections, and he had been in the habit of putting the cleats just behind the glass in front of the perpendicular edges of the sections. This produced more or less of a laugh. On the whole, the no-drip shipping-case seemed to be able to stand on its own bottom.

Next the covers were complained of—not particularly "Bro. Root's," but those made by *any* supply-manufacturer. They would warp and twist all out of shape; the nails would pull out, and the board would split where the nails passed through; and it was hoped that Mr. Root would, during his short stay in Colorado, look over some apiaries, so that he might see the actual effect of a Colorado sun and climate.

By way of parenthesis, right here I will say that I did visit several apiaries. Boards would indeed, when not painted, shrink all the way from ⅜ to ½ inch to the foot; would curl and twist, and the nails that had been driven "clear home" would be sticking out of the boards anywhere from an inch to almost their entire length. Covers that had been nailed up for four or five years, and hadn't been painted, showed nails sticking up, and so loose they could be easily pulled out with the fingers. One might go around and drive them down with a hammer, but the heads would bob up just the same the following summer.

In the convention some expressed a preference for covers covered with tin; but these were objected to on the ground that the boards curled under the tin so that they would not fit down squarely on the top of the hives. Some covered the boards with canvas, and then thoroughly painted the whole with white lead. This answered very well, but was too expensive. I was requested to see what could be done in the way of procuring covers made of papier-mache, pasteboard, or some material that would stand their exacting climate. As it rains in Colorado but rarely, and as the sun, by reason of the almost cloudless sky, and an atmosphere as clear as crystal, beats down with unrelenting force, it was urged that something different be devised. A cover that answered every requirement in the East, and, in fact, in many portions of the West where there was more or less humidity in the air, was almost totally unsuited to Colorado and other regions so dry that irrigation had to be resorted to in order to grow any crops or secure plant life of any sort.

A new strawboard works has been started near us, and we shall look into this matter very carefully.

The Coloradoans do not need a cover so much to keep out rain as something that will hold the bees in the hive while it is being moved, and to prevent the ingress of robbers at any point except the entrance. The climate is so dry, and rain so infrequent, that I found that barns are unnecessary for the storage of hay; and, actually, edged tools, such as planes, saws, chisels, and the like, are left out on work-benches in the back yard—no need of carrying them indoors; there is scarcely ever any dew, and very seldom any rain.

FENCES AND BURR-COMBS.

Returning to the subject of supplies, at another session of the convention I was made the recipient of a litle more bombardment on some of the recent changes that have been made. Some of the brethren could see no use in fences. At one time it appeared I was going to get the worst of it; but when Secretary Rauchfuss and others thought I had been hammered long enough, the tables were turned slightly in my favor. Mr. Rauchfuss reported that quite a number were very much pleased with the fences; and J. W. Harris, of Rocky Ford, Col., said that, in his vicinity, the fence was growing rapidly into favor; that the Abbey-Hardy Co. greatly preferred to buy honey in plain sections, and would take it in preference to that in the old style, any time. Some fence honey was exhibited by Mr. Herman Rauchfuss, brother of Frank, that had been attached to the fences by means of burr-combs. On removing the sections, of course the capping was torn off in little patches. This experience, so far as I know, seems to be quite unusual. Indeed, at other sessions I learned that bees in Colorado have quite a fashion, under some conditions and during some seasons, of fastening comb honey in old-style sections to wood separators; and, in fact, there had been so much trouble that one man reported he did not care to use separators at all, and argued quite in favor of no separators in comb-honey supers. But of this I shall have more to say at another time.

Referring to burr-combs being attached to fences and sections, Mr. M. A. Gill, formerly of Wisconsin, now of Boulder, Col., reported in GLEANINGS for February last, that "while casing 400 cases about equally divided between the no-beeway and the old style we did not have enough crooked or broken honey for table use for two families." Mr. Gill did not arrive at the convention until near its close, which was some time after this discussion had taken place; but mistaking him for Mr. Hill, instead of my old friend whose name began with a G, I did not talk with him on this question as I would have done had I known his identity; but learning my mistake, after arriving home I asked him if he had had any trouble with burr-combs being attached to the combs in plain sections. In reply he says:

> In answer to your question as to whether I am bothered with "burr-combs" in using your fence system, I will say at first I was to some extent; but it mostly came about by having careless help in putting in starters. I found, if any thing happened to a section of comb (with that system), almost invariably one on each side was involved in the mishap.
>
> My first year's experience with fence separators was 800 supers in three apiaries of our own (Mr. T. M. Todd, of Grand Junction, Col.); besides these I came in con-

tact with many more, as I was bee-inspector of Mesa Co. at that time, which gave me an opportunity to see the results under different conditions and management.

My conclusions were these: That there are three essentials in the use of the fence system.

1. All starters must be perfect. They should reach (practically) clear across the section, with no ragged edge at the bottom, no little bits hanging crosswise, nor corners turned out.

2. With these narrower combs it is absolutely necessary that the hives be level from side to side.

3. The manipulator must see to it that colonies never become overcrowded for room during a heavy flow or while comb-building is being actively carried on; better have a little too much room than not enough.

In my opinion, if the above conditions are carried out, there is no system for comb honey that will give so great a per cent of *perfect* section as the fence-separator system. M. A. GILL.

Boulder, Col., Dec. 23.

Right in this connection, before we dismiss this subject of supplies, I should like to say that we, the Root Co., and for that matter I believe *any* supply-manufacturer, are always glad to receive suggestions — yes, even criticisms. Personally I consider, as I said, all such as friendly acts, and really a proof of friendship, providing that those criticisms are offered in the spirit of friendship, and those offered at Denver were of this sort.

OUR HOMES,

BY A. I. ROOT.

He that soweth to his flesh shall of the flesh reap corruption; but he that soweth to the Spirit shall of the Spirit reap life everlasting.—GAL. 6:8.

Our friends will remember my talk in our Dec. 1st issue in regard to expectorating on the streets, and in closets and other places. Well, I am happy to tell all who may be interested in the matter that that little talk of mine effectually cured the whole business on our premises; that is, there has been none of it in our closets since then. We had them scrubbed up nicely, the baseboards, blinds, and pipes neatly painted, some boxes of sawdust provided in the way of spittoons, and up to this writing I have not seen a trace of any thing filthy on the floor, and not very much of any thing in the boxes of sawdust. There has been such a complete reform that I almost felt as if I had been more severe in my talk than I needed to have been.

But even if we did win one victory, there are still other evils to fight. Several times of late I have been told that the small boys of our establishment are using tobacco to an alarming extent. When the matter was first made known to me I concluded my informant must have overstated it, because I thought I knew of so many of the boys who surely would not touch tobacco in any shape or manner. But I was reminded again of the matter, and was told that there were several under the age prescribed by the laws of our State, in regard to giving or selling the narcotic. I decided to talk to the boys one at a time whenever opportunity offered, where I could see them alone, and I did some talking. Finally, some one who had an opportunity of knowing said he feared every boy in a certain large department was not only chewing, but the most of them were smoking also. He said they did not smoke on our premises (our insurance policies forbid it); but that if I would watch them when they went home nights I might see a great lot of boys pulling pipes out of their pockets, lighting them, and going through the town puffing away in order to *advertise* the fact, as it would seem, that The A. I. Root Co. had "let up" on its stringent rules of former years in regard to the use of tobacco. I confess I was a great deal troubled by this report, and I said, "Why, I am sure there are several boys in the room you mention who do not use tobacco in any shape or manner."

"Will you please name one such?"

I mentioned a boy of whom I felt about as sure as I would of our own boy Huber. He is just about Huber's age. To my astonishment, my informant replied:

"Mr. Root, you can not feel any more pained than I do when I tell you that this very boy," calling him by name, "has been puffing a pipe on the streets with the rest of them. My impression is that he has been 'bullied' into it. They have got a going to such an extent that, if there is one boy in their room who hangs back, they torment him until he smokes a whiff or two, so that they will let him alone. In fact, there seems to be a sort of concerted plan among the boys to make all the good boys join in, so there will be more of them to be reproved when their employers undertake to do something about it."

In order to be sure I was not mistaken I asked several of the older people in our employ (those who "love righteousness") in regard to the matter, and the report every time was that the statement made me was pretty nearly correct.

Very soon afterward I stated the matter to the younger members of our firm, remarking that something should certainly be done; and I think I suggested myself that I did not think we should be very severe on the boys if we decided not to keep any boy under age who continued to use tobacco. Well, every member of our firm indorsed what I said, and some of them did so rather emphatically. Then I made haste to say, "All right, boys; but we will not adopt any such severe measures as this before we have tried gentle means." Then Ernest immediately suggested that cast-iron rules were to be avoided in all matters of this kind unless no *other* means would accomplish the result. Then I petitioned to have the matter left in my hands. God knows it has never been in my heart to dismiss any boy, even for the use of tobacco. If, however, we have a boy in our employ who can not be dissuaded from trying to entice others, especially other boys younger than himself, into the tobacco habit, then we shall certainly have to dismiss him. At the present writing I have met and talked with a good many of the boys; and while several of them have admitted that the statement made to me was pretty nearly true, I am sure I have a good many of them working on my side, even if they did not give me a positive promise to do so.

And, now, dear friends, while I talk through these pages to some of the boys of our establishment, who knows but this same talk may, through God's providence, strike some other boys, and set them to thinking in a healthy and reasonable way? Some of the older ones may blame me for appealing to the boys' lower feelings, instead of the higher and spiritual that are involved in this matter; but boys (and some *men*) will always listen to any thing that touches the pocketbook. First, did any of you boys ever know of any one (boy or man either) who got a raise in wages *because* of the fact that he used tobacco, either chewing or smoking? Well, I have known quite a few who got *less* wages because of this habit. And then they were out of pocket too, because of the expense of such a habit. I do not mean, mind you, that their employer paid them less because he was cranky on the subject (as you may think I am); but he paid them less because they were *worth* less. Tobacco destroys the nerves; and nerves and brains are what every employer wants at the present day. Why, my young friend, you would think the proprietor of a saloon who hires a man to sell beer *and* tobacco (for the latter always goes with the former) would expect, of course, that his clerk would use beer and tobacco both (to be consistent), would you not? Well, just the other day I was reading an article in one of the periodicals that defends the saloon business. There are several such journals, and I read them almost every week to see what our friends on the other side of the subject have to say. Well, this journal was recommending a candidate for some public office. They said like this: "Mr. ——, it is true, is the proprietor of a saloon; but we are able to tell you that he is not only a total abstainer, never drinks a drop of any thing intoxicating, but he does not even use tobacco *in any shape or manner.* He is just as clean a man as any of the temperance fanatics can bring forward." Well, boys, I thought this periodical was rather "giving themselves away," as you express it in slang phrase. They are arguing for the beer and tobacco traffic in every issue, and upholding the business by every means in their power; and yet when it comes to wanting a *good* man to fill an important office they actually *boast* because they have got one who does not himself use any of the stuff he sells to other people. Let us now go back to the pocketbook part of the business.

If you should lose the place where you now are working, and should desire to go somewhere else, you would command better wages anywhere in the world (even if you were going to clerk in a saloon), if the recommendation read something like this: "The bearer, John Smith, has no bad habits; never drinks any thing intoxicating, and does not even use tobacco in any shape or manner." The whole wide world wants clean boys, and is willing to pay for them. Now look here: I do not mean to say that every boy who does not drink, chew, or smoke, can get good wages; for I know as well as you do that there are lots of temperate boys who are too stupid or too sleepy to be good for very much anywhere; and there are lots of keen, bright, smart boys who use tobacco. The point I make is this; Other things being equal, the clean boy gets better pay.

I have written a great many times about work and wages, and have tried to tell the boys how to get better pay. I have many times spoken of the very great importance of being loyal to one's employer; of putting yourself in harmony with his likes and dislikes; that is, of course, so far as you can honestly and consistently do so. Suppose you are working for a man who has a great fancy for dogs, while you (like myself) do not like dogs. Well, now, this dog business is a question where there are many differences of opinion. Every man has a right to keep as many dogs as he pleases, or breed high-priced dogs for sale, providing, of course, his dog industry does not trespass on the rights of the public at large. Well, you are working for him, we will say, in some kind of business where you have not very much to do with the dogs. You are anxious to get a raise in wages. You want your employer to have a good opinion of you. You naturally put your best foot forward when he comes around. There is no harm in this; it is right and proper. Well, will it not be very *poor* policy for you to give way to your own notions, and to kick viciously one of his favorite dogs every time it comes near you? You might explain to him that you do not like dogs, and wanted them to keep out of your way and out of your sight. Well, even though he recognizes it is your privilege to dislike dogs, just the same as it is his privilege to like them, would you not be very foolish to gain his ill will and dislike in the way I have mentioned? Why, the whole wide world would say you were a boy of no *tact*, and that you would never get along in the world until you had learned to adjust yourself to your circumstances and conditions. Let us now make a little practical application of this:

I am sure there is not a man in my employ who does not know that I have fought the tobacco habit almost all my life; and I think these same boys know, too, that it is not a selfish motive altogether, but that I really have the best welfare and interests of the boys and girls both whom I have employed for so many years. I do not believe you will think I am boasting when I suggest to you that, during the years you have known me, I have not been doing business to make money; that is, making money has not been the first consideration. If I could make money by doing something that would injure the boys, I would not touch it under any consideration. You certainly know this; and as I believe tobacco is harmful to both body and soul, I would not have any thing to do with it, no matter how much money was offered. One of the favorite texts of my life has been, "Seek ye first the kingdom of God, and his righteousness, and all these things shall be added unto you." In working for God's righteousness, the promise has been verified. You know, boys, that I have been blessed in trying to give people work. Now, in view of this, how *could* you, while in my employ, formulate a plan, and carry it out, for getting every boy under age (and some of them under 16) either to chew or smoke, or do both? Did you not feel as though you were doing a dishonorable thing? and have you not felt ashamed of it? Of course, you kept the tobacco out of my sight whenever I came around near you. Was that a manly and honorable thing to do? I have been a boy-myself, and God knows I was not *always* a manly or consistent boy. I remember what a fine thing we used to think it was to play tricks on the schoolmaster, and work against him. The cases are not exactly parallel, but I think this tobacco craze has come along something in the same line. I do not believe you really wanted to be bad and wicked, but that you did it because there was a sort of excitement about it that boys usually enjoy. They call it *fun;* but, dear boys, is it not best to have even our fun a manly and innocent fun? To be playing tricks on your employer, or working against him in an underhanded way, is a foolish sort of fun, is it not? for sooner or later you are sure to be found out; and how can you expect or ask for a raise of wages when you have been working *against* instead of *for* your employer? You may claim that you have not been working against my *business* interests. But ought not a man to have something higher in this world than even business? The most serious and the saddest part of this whole matter is urging good boys, with Christian fathers and mothers, to learn the tobacco habit. I think that most of you have read what I said about Mr. Herkner, on page 778. There are many others who can tell how tobacco has injured them, bodily and mentally, but not one will tell of its being a help—that is, a help in the end. Now, when you help to fasten such a habit on a boy in his youth, are you not getting pretty nearly in line with the class of people whom the Savior held up to view? Shall I tell you what he said about them? "Whoso shall offend one of these little ones which believe in me, it were better that a millstone were hanged about his neck, and that he were drowned in the depth of the sea." Some of the boys you have coaxed into this habit are members of the church. Their parents are Christian people. As I look into your faces, or when I meet you in the morning, and you respond to my salutation in a cheerful and manly way, I can not believe it possible that you are *enemies* of mine. You look friendly, and I believe you are at heart my friends, each and all of you. Dear boys, we do not want hard and severe rules in our establishment. Whenever we try to enforce rigid rules, almost every time they hurt some innocent party, and strike where we do not mean to strike. I never er want to say to any boy, "I will turn you off if you do not do so and so;" and it has been a long time since I did say it. When some boy commences to work for us, and pleasant relations begin to be established, when he helps me and I help him week after week and month after month, a tender relation grows up between us—at least it is so on my part. When any boy "quits" without a word to his employer or the foreman of the room where he works, I always feel hurt. I get to asking myself the question over and over, "Have I been neglectful of this boy's interests in any way? Is it any fault of mine that he has left and gone away?" for whenever we have been obliged to dismiss any one, man or boy, I always feel bad after it. When we talk the matter over and mutually agree that one of our friends has had a better offer than we are able to make him, that is a different thing altogether. Then we can shake hands and wish each other success; and when one of our old hands comes around, years after, how pleasant it is to shake hands with him, and talk matters over! Then the beautiful text at the head of this talk, I have said scarcely a word about it so far; but if you will read it over I am sure you will see the connection. These things that gratify a bodily appetite, especially stimulants and narcotics, are things that are sown to the flesh, and there has got to be a harvest. "Whatsoever a man soweth, *that* shall he also reap." Mr. Herkner and others can tell you what the harvest is. But the boy who sows to the spirit — that is, to the spirit of righteousness and to the spirit of Christ Jesus — shall reap life everlasting. Here in this world he will be wanted, and will have friends everywhere; and he need never be afraid to look anybody in the face, nor to have people find out about his life and habits.* In talking with the boys, I met with three who work in other rooms. These three have lately united with one of our Medina churches, and have started out as young Christians. Do you think they use tobacco? Of course not. There may be *old* Christians who use tobacco, but I do not believe there are very many young ones. I said to one of them, "John, do you use tobacco in any shape or form?"

"No, sir. I never had a bit of it in my mouth in my life; and, what is more, I never expect to as long as I live."

Why, the thrill that it gave me when I took him by the hand and congratulated him lasted me all day. Several times I asked myself,

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*One man said to me (and he is a Christian man, and a good friend of the boys too, I am sure), "Mr. Root, if your boys would show you what they have in their pockets, I think you would find a dirty pipe and a lot of tobacco—perhaps both chewing and smoking tobacco also—with almost every one of them; and I should not be surprised if *some* of the outfits would include also a pack of cards. Now, I do not know what you think about it; but as for myself, when a boy stuffs his pockets with such things I shouldn't want him around at *any* price or under any circumstances."

The above may be a little severe. But suppose, boys, I should pleasantly ask you, next time I see you alone, if you have any objection to letting me see what your pockets contain. I said this to one boy, and he admitted he was one of the tobacco-users also, or had been; but he looked up good-naturedly and said, "Mr. Root, I am perfectly willing to show you every thing there is in my pockets right now, if you care to look at them." Oh how glad I was to hear the boy say this! It was an admission that he was not using tobacco then. And now how is it with the rest of you? If I were to ask you the question as I did this one, are you perfectly willing I should see every thing you carry around daily in your pockets? Of course, I could not tell what you have unless you see fit to show me; but, dear friends, are you forgetting there is a great God above whose all-seeing eye not only takes notice of the contents of the boys' pocket, but reads the very thoughts that are in every boy's heart?

"What is it that I was feeling so bright and happy about?" And then I would remember. Now, boys, unless you have a pretty good opinion of me you may think that my next statement is a little stretch of the truth; but I assure you it is not. After I had shaken hands with John, and he had started to go away, I remembered something. I said, "Look here, John. I have some pleasant news for you that I almost forgot when I was shaking hands. The foreman of your room says you are worth more money than you have been getting." Now, I rather think *he* had something to think about that made him feel happy all day. Now, mind you, boys, I did not raise his wages *because* he had never used tobacco. That is not the way we do business. We try to pay each boy and man what he is actually worth, without respect to his notions and likes or dislikes. If he is loyal and true to the interests of our company, that adds to his value. It can not *help* adding to it. But whenever I have tried the experiment of paying somebody for "being good" it has always been a flat failure. I am entirely disgusted with the whole business from beginning to end, of *hiring* people to do right. After they have done right of their own accord, and have built up a reputation and character, then it is right and proper to pay them their money value. So please remember we are not going to *hire* any of you to give up tobacco. You must do as you see fit and take the consequences, as in the language of our text. May God help you to do right in his sight—not because there is more *money* in it, but because it is right and manly to be *pure in heart*, and clean and upright in conduct.

Humbugs and Swindles.

SELLING RECIPES, ETC.

In a recent number of one of our agricultural papers we find the following:

> **CIDER WITHOUT APPLES.** A GOOD DRINK.
> Send 25 cents for recipe. This is a money-maker.
> THOMAS & CO., Box 406, New Brighton, Pa.

I would suggest, when somebody wants to advertise a recipe like this, letting the *editor* pay the 25 cents, and then print the valuable information (?) free for the whole of his subscribers. The recipe for making cider without apples does not occupy any more space than the advertisement. Here it is:

> To cold water, one gallon, put dark-brown sugar 1 lb.; tartaric acid, ½ ounce; yeast, three tablespoonfuls. Shake well together. If made in the evening it will be ready for use the next day. THOMAS & CO.

It was not printed; and, for that matter, it was not very well written either. A quarter should pay for a nice little *book* on making cider from apples, including all substitutes; and, *finally*, there is not any thing new or novel about the recipe. You will find it in almost any recipe-book, and no doubt Thomas & Co. copied it. May be the above concoction will "set well" with *your* digestion, but it certainly does not with mine, for I have tried it.

HIGH PRESSURE GARDENING

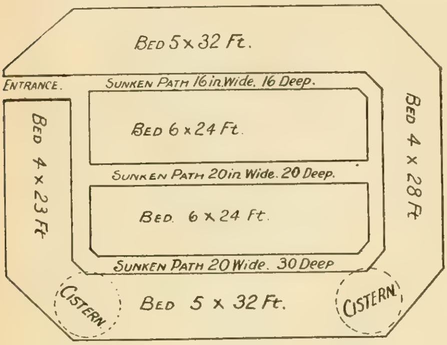
BY A. I. ROOT.

In our last I said the greenhouse I was talking about should be placed on a piece of ground sloping gently to the south. Then we should have something very much like the large picture we give on p. 27. In fact, a plan of this same building was submitted to the readers of GLEANINGS in 1893, p. 27; and it is working so well, and so very little change has been made in its construction, that I have thought it worth while to reproduce it. This house was originally all made of loose sashes; and, in fact, the sashes on both the east and west ends are movable now, and we lay them off along in March and April when it gets to be pretty warm inside. The whole south front is also raised and lowered by machinery, the sash being hinged at the eaves—see smaller cut in the upper right-hand corner. Now, this way of placing the glass, you see, covers more ground than any other method of making a greenhouse. It also has the advantage of letting the morning and evening sun go straight through the ends, as I have explained, and in the middle of the day the winter sun goes directly through at right angles to the glass in the movable sash right along the south side.

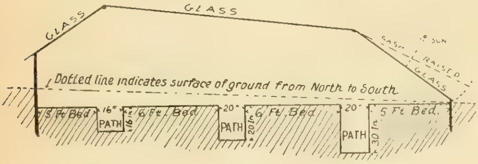
Perhaps you have already wondered how the proprietor was going to get around inside when the whole structure is not anywhere more than four or five feet above the level of the ground. Well, this is another of the advantages of the arrangement. The walks are made by cutting down below the natural surface of the ground. The sides of the beds are held up by boards nailed to stout oak stakes; and in order to economize room the paths are only 16 to 20 in. wide. On the south side of the house we have, of course, to dig deeper than on the north side; and we go only deep enough anywhere to let the head of the workman clear the glass and hot-water pipes overhead. The sash-bars are supported by strips of timber 2×6. These joists rest on one-inch gas-pipe driven into the ground sufficiently so that the weight of a heavy fall of snow on the roof will never sink them in any further.

In order to secure perfect drainage at all times it may be well to have a terrace as shown in the cut, or something equivalent, to make the water run away from the greenhouse on every side, instead of soaking down around the walls, to their detriment. First, we have not, as yet, ours arranged—that is, so far as surroundings are concerned—just like the large picture; but as we are planning something of the kind, I told the artist to make an ideal picture rather than one showing things as they really are. We have once or twice been bothered by water getting into the paths, and at one time the drain tiles got stopped up, so we had a muddy mess of it. Since we have made deep ditches all around the house we have had no trouble of this kind. The north side and both ends are banked up with coarse stable manure, clear up to the glass in winter time. This makes it very warm, for the only place the frost can get in is through the glass overhead.

Below I submit two diagrams—one a bird's-eye view, and the other a cross-section from north to south. After what I have said I think you will understand the whole arrangement, without any further instruction. The bed on the north side, as you will notice, is *below* the level of the ground. This makes it safe from frost. We have, until lately, drawn water for watering the plants from the hot-water pipes overhead; but for several reasons I dislike hard water, or even water that contains much mineral of any kind; therefore we have put in cisterns made of a length of large-sized sewer-pipe, so that one edge of it runs under the south path. By raising a cover we can dip rain water out of either of these cisterns when we do not wish to use the well water from overhead. For showering the foliage I very much prefer soft rain water. The middle bed furthest north, 6×24 feet, now contains 2500 Grand Rapids lettuce-plants. They are about 3 inches apart at the first transplanting. At 40 cents per 100 these transplanted lettuce-plants will bring an even $10; and we frequently get from $5 to $10 for the crop on one of these beds in 30 days. The secret of making a greenhouse pay is to have every inch of space fully occupied, and have every thing work under "high-pressure gardening." The house was intended for hardy plants only; but this year, as I have told you elsewhere, we are growing some tender hot-house stuff. I have also told you that our house is warmed entirely by exhaust steam from our factory. Well, the day before Christmas the factory was not running because it was Sunday; and of course we did not run on Christmas, so there were *two* days without any heat; and before we started up Tuesday morning the thermometer was only 10° above zero; and to save my tender plants I set them down in the deep path on the south side, and then covered the path with newspapers. Not a plant was injured. The lettuce-plants up in the beds showed some frost, but not enough to do them any harm. If you put your tender plants in pots, so they can be set down in the paths during severe nights, you can manage without being obliged to keep up a fire all night.



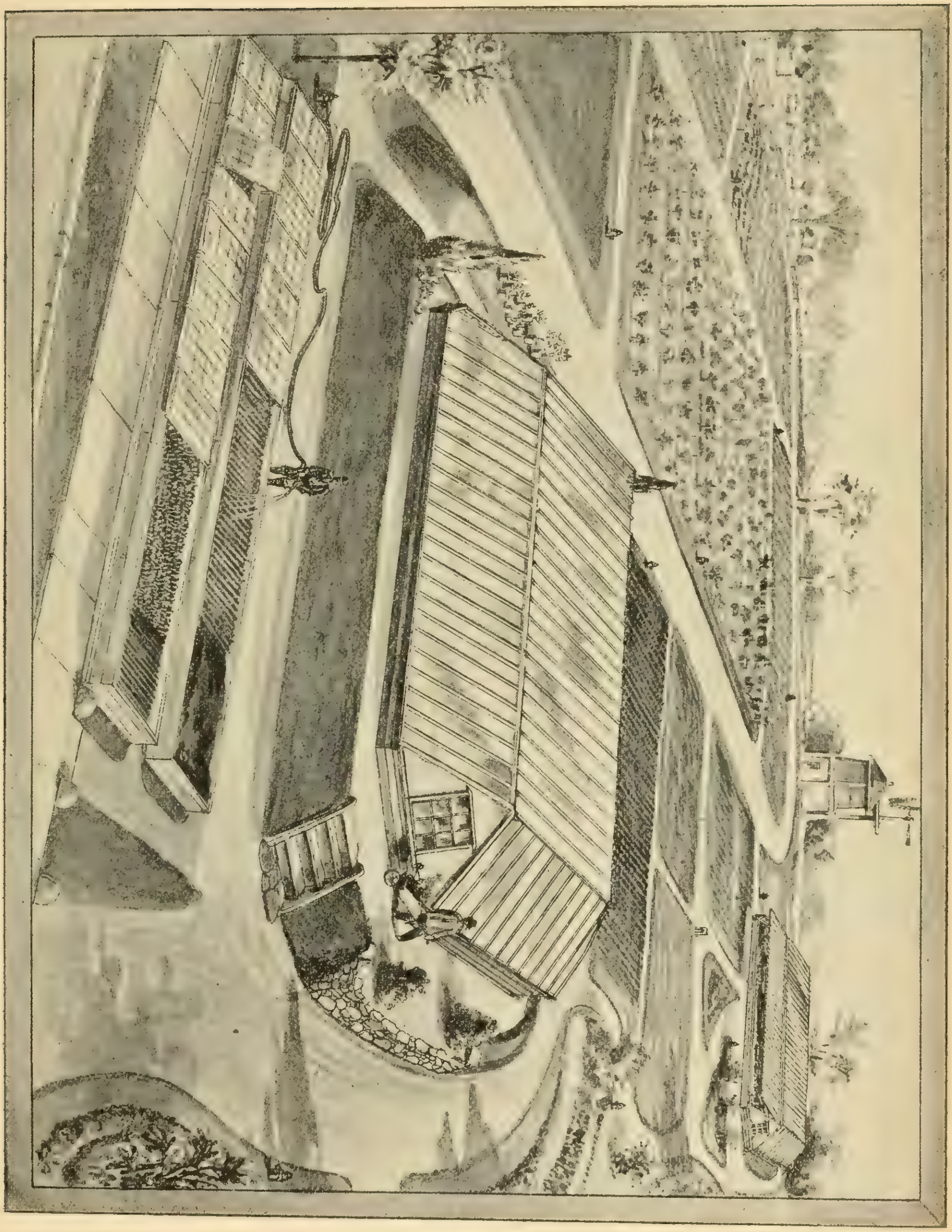
BIRD'S EYE VIEW SHOWING THE BEDS, ETC.



CROSS-SECTION OF THE GREENHOUSE FROM NORTH TO SOUTH.

The house is warmed by exhaust steam running through stone sewer-pipe under the beds, and by hot-water pipes overhead just under the glass. But such a structure would grow a great variety of hardy stuff without any heat at all except that from the sun; and further south they could be used for wintering over even tender plants, or any thing that is likely to be injured by frost during extremes of weather. Of course, the structure could be warmed by a flue, hot manure, or any of the methods usually employed to warm frames or greenhouses. In our case the exhaust steam runs from east to west through the south bed; then it turns and goes back from west to east under the next bed, and so on, in a zigzag way, from one end of the house to the other, until it comes out in the open air at the northeast corner. Plants that need a good deal of heat go directly over the underground sewer-pipes, while very hardy stuff does nicely around next to the outside walls.

Perhaps you may care to know what I am doing with that pretty little greenhouse just now. I will tell you. In visiting the various parks I have often commented on the ornamental foliage-beds. Perhaps the finest show of plants and flowers I ever saw anywhere in the whole wide world was at Lincoln Park, Chicago. I have seen more expensive places, and many beautiful residences in Bermuda, as well as the millionaires' gardens in California and Florida. But money does not always purchase things I enjoy most. Near Burpee's place, at a little station in one of the suburbs of Philadelphia, I saw a bed made of colei, geraniums, and dusty miller—at least that is what I call the latter—that filled my soul with delight. I looked on it again and again, and drank in inspiration and joy from just that little bed of plants perhaps not more than two or three rods square. Well, I am planning to have something of the sort near the Home of the Honey-bees. Of course, I am going to have all of the honey-plants in handsome shape, and then I am going to have a "posy-garden" of my own. I have lately been taking down my books on flowers, and have read with great delight Peter Henderson and Prof. Bailey, as well as the books and catalogs of our great florists. In potting strawberry plants in jadoo fiber, as we have been doing for two or three years past, I have begun to think there are some special features about the little cheap earthen pots that *make* things grow; but it was not until I was almost or quite 60 years old that I paid enough attention to books on flowers to get hold of the idea that many if not all plants could be made to make astonishing progress by starting them



in very small pots, and shifting them very gradually to the next size larger, and so on.

Plants need air as well as water and fertile soil. I have just got on to the fact that the roots need air, and must have it. Too much air dries them up, and kills them very quickly; but just enough, with just enough moisture, does wonderful things. In taking the strawberry-plants out of the pots to ship them by mail in jadoo fiber, I have often noticed with wonder the little white roots covered with microscopic hairs. Well, these rootlets are the chaps that want air; and in pursuit of air they push out very speedily until they touch the outside of the little pot; and then they really seem to love to crawl around with great speed between the pot and the soil. I have sometimes been surprised to see how quickly the roots of a strawberry-plant would make a perfect network all around against the sides of the pot; and if we do not watch them they will actually go around the pot not only once but twice, and may be more, and finally get "pot-bound" and stop growing if the gardener does not see to it and shift them to a pot one size larger. Now, putting them into a great big pot, so you will not have to make changes so often, does not answer; that is, it does not give any such results as frequent shifting. I have tried a great many times in my life to grow flowers, but did not succeed very well. Some of my feminine friends have a knack of making every thing grow they get hold of. They will bring a dead plant to life. But my luck has always been to reverse things, and make a beautiful *live* plant "go dead." I suspected all along it was because I did not get in touch with the wants and needs of the little beauties. When I say "little beauties" I mean plants that are growing and blossoming in little bits of pots, say those with a top not larger than a silver dollar. Well, I am just learning how, and I feel almost ashamed of myself to think I found so much joy and happiness in making plants grow. When somebody hunts all around for me, and finally finds me in the greenhouse, where I have forgotten every one and every thing, I sometimes hang my head as if I were guilty, and I confess I have been a little surprised to see that Mrs. Root and the children do not scold a bit, but laugh at my devotion to my new hobby.

I have invested a little money in plants—not very much, because I was satisfied in the outset that I should find more pleasure in growing the stuff myself that I wanted, than in buying of florists "ready made." So I bought some $5.00 worth of plants to start with. For a good while something would happen to most of them, and I killed so many learning how, that I almost began to think some evil genius had a spite against me in the line of plant-growing; but when I studied out the trouble, and began to get acquainted with the things, oh how I have enjoyed it!

A few days ago John Lewis Childs sent me two golden-leafed salvias. The two cost 20 cents. I always did love bright foliage; and when I took the little "darlings" (I can not think of any other word that expresses my feelings toward them) out of the box in which they were carefully wrapped in moss, I uttered an exclamation of surprise and pleasure. The leaves were golden without a question; and they were so pure and delicate too! and then, to cap all, each plant had a little bunch of scarlet blossoms that made a beautiful contrast with the golden leaves. At first it seemed to me as if it would be impossible to keep so much foliage on a newly transplanted plant; but I had just fixed one warm bed in the greenhouse, with a hinged sash over the top so I could confine the air and keep it constantly moist.[*] I put the plants in small pots, almost cramping the roots. I then placed them in this cutting-bed, as I call it. They stayed there in a very moist warm atmosphere for about four days. Not a leaf wilted. Then I put them outside in the greenhouse. They held up just as well except when the sun shone rather brightly about noon; then they began to wilt; but by putting a newspaper over them, so as to cut off the direct rays, they held up bravely, and next morning were as bright as if they had always grown in their new location. Well, just before dictating this talk I discovered one of them had sent out quite a number of little white roots against the side of the pot, that were crawling and feeling about for air and moisture between the jadoo and the sides of the pot.

Now, this is a small thing to feel happy about; but I have got in touch with the salvias so I have started them growing without losing a leaf and without a leaf shriveling; and what I can do with salvias I can do with other things. Just a little *after* the plant puts out these new white roots, along the side of the pot, it will begin to show shoots pushing out above ground. For instance, I thought my umbrella-plant was going to die; but when I turned it out of the pot and saw a great lot of these roots, my foreboding turned to joy; and the next day, sure enough, a strong thrifty shoot came up out of the ground, which will be a "new umbrella" in a few days at the rate it is growing. And then I have got some geranium-blossoms that seem to be a little more brilliant, a little richer, and more velvety, than any flower I ever saw before; and my primroses are opening up new flowers almost every day; and my coleus-plants that got sick, and drooped their leaves, are not only putting out new roots, but they are giving me glimpses of gorgeous coloring that make me think and feel that "a thing of beauty *is* a joy for ever," especially when it is a plant that you have grown from the seed, or rescued when you thought it was going to die. Peter Henderson says the quickest way in the world to make a "sick plant well" is to put it in a very small pot, and in that some rich soil, giving it one good watering, and then let it alone until it gets quite dry. When it gets dry enough, if it is not too far gone it will send out some new roots toward the sides of the pot; and when the tiniest new root starts, then you may know you have gained the victory.

I forgot to say in the proper place that a new root or a new leaf or a new flower interests me *almost* as much as the new baby that I have told you something about. He is just beginning to make visits over to his grandpa's, and occasionally he treats us to one of his bewitching smiles. I suppose his happy mother watches each development of intelligence very much as I watch and study the habits of my "little posies."

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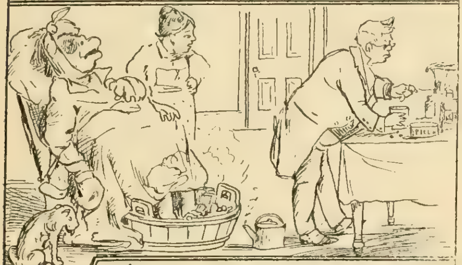
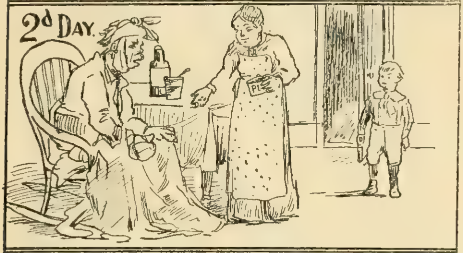
[*] Since the above was in type I have succeeded in taking a slip from one of those salvias, and getting it to take root in my forcing-bed, and now it is in the little pot with jadoo fiber, sending out roots of its own, circling around the sides of the pot for air and moisture. It was done so quickly and so easily I am sure I can make a hundred more just like it, with scarcely a failure. Of course, this was done in the forcing-bed I have described. Just think of taking a little twig from a growing plant, or even a single leaf, for that matter, and giving it so much "encouragement" that it sends out roots and makes a plant! In watching this wonderful process it made me feel as if I was getting in touch with, or delving into the secrets, as it were, of the great Father above; and this astonishing thing we call "life" is not only held wrapped up in the tiny seed, but in every twig, and even each individual leaf, of every growing plant. "How wonderful are thy works, O Lord!"

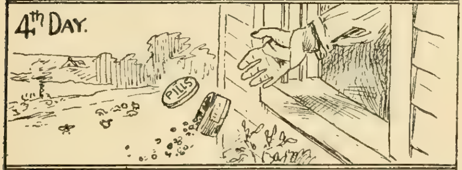
Mr. Foozel:



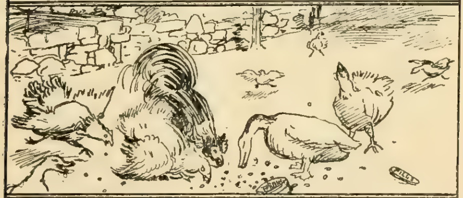
Stings — Doctor-Lotion-Pills.



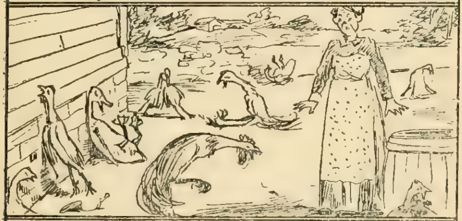
Mr. Foozel declares the lotion "all right" but announces his lack of faith in Pills.



Mr. F. feeling better; arrives at a decision.



The family fowls receive the donation as a bonanza



To the utter astonishment of Mrs. Foozel.

Murray

"I have had time to but little more than glance over the A B C of Bee Culture, but from that glance I should say you out-did yourselves. The pictures and style of make-up are very near perfection."—*G. M. Doolittle, Dec. 21, '99.*

SPECIAL NOTICES BY BUSINESS MANAGER

ADVANCE CATALOG FOR 1900.

We have printed for circulation, before our complete catalog for 1900 is ready, fifteen thousand copies of an advance catalog of sixteen pages of illustrations, and price lists of every thing shown in the complete catalog, but without the descriptive matter. We mail this on application to those who write for prices, until the new catalog is ready, about Feb. 1.

CHOICE WHITE HONEY.

We are still supplied with choice comb and extracted honey, which we shall be pleased to furnish to those in need. The comb is in cases of 24 sections, weighing 20 to 24 lbs. net, at 16c per lb., in five-case lots or over. The extracted is in cases of 2 cans, weighing 110 to 120 lbs. net, at 10c per lb., by the case. Five-case lots at 9½c. This honey is very thick and heavy, and light in color. Samples of extracted mailed free to those interested.

WINDOW GLASS DECLINED.

Soon after the differences between the glass-blowers and manufacturers were adjusted, The American Window Glass Co. made a cut in prices so that, for a time at least, lower prices prevailed. This is but little help to the bee-keeper at this season of the year. We can now sell 8×10 glass for cold-frame sash at $2.50 per box; 5-box lots at $2.40. No change in price of shipping case glass at present.

Special Notices by A. I. Root.

THE NEW RUSSET SCAB-PROOF POTATO.

We are using the above right along; and Mrs. Root has just announced that she prefers them *for the table* to any other potato grown during the past year—that is, *all things considered*. The greater part of the late potatoes were killed before maturity by the early frost; but the russets come under this head also, for they were planted very late. She admits that the quality is not equal to that of choice Freemans; but after trying a bushel of Freemans, and then a bushel of russets, she gives the latter the preference; that is, for this present year.

HOW SHALL WE VOTE?

On page 6 Dr. Miller asks me a question, and Ernest has taken the liberty of answering it; in fact, he answered it for me before I saw it. His concluding sentence is about what I should say. If the candidate does not stand for God and the right, work to defeat him, no matter what his party. Circumstances alter cases so much that I should not like to make a cast-iron pledge about voting; but I will say this: I shall cast my vote where, in my judgment, it will do the most good, all things considered, before God and before my fellow-man.

A BOOK FOR EVERYBODY WHO KEEPS A PIG.

The O. Judd Co. have just gotten out a new book entitled "Home Pork-making;" and I should think it would pay every family, having a pig, to send 50 cents for the book. It tells how to take care of a pig, and then there are lots of pictures for cheap appliances for butchering. Who is there among our readers who has not had more or less experience at butchering-time who would have been glad to avail themselves of the latest and most approved appliances? Then there is all about making the pickle, barreling the meat, fixing a smokehouse, all the way from the very cheapest box or barrel to the latest and most approved arrangement; all about making pig-troughs; how to keep them clean with little labor; recipes for cooking pork in every imaginable way. The book will be mailed from our office for 50 cents. It has 144 pages, and pictures all through.

Gleanings in Bee Culture

[Established in 1873.]

Devoted to Bees, Honey, and Home Interests.

Published Semi-monthly by

The A. I. Root Co., = = Medina, Ohio.

A. I. ROOT, Editor of Home and Gardening Dep'ts.
E. R. ROOT, Editor of Apicultural Dept.
J. T. CALVERT, Bus. Mgr.

TERMS. $1.00 per annum; two years, $1.50; three years, $2 00; five years, $3 00, *in advance;* or two copies to one address, $1.50; three copies, $2.00; five copies, $3.75. The terms apply to the United States, Canada, and Mexico. To all other countries 48 cents per year extra for postage.

DISCONTINUANCES. The journal is sent until orders are received for its discontinuance. We give notice just before the subscription expires, and further notice if the first is not heeded. Any subscriber whose subscription has expired, wishing his journal discontinued, will please drop us a card at once; otherwise we shall assume that he wishes his journal continued, and will pay for it soon. Any one who does not like this plan may have his journal stopped after the time paid for by making this request when ordering.

RECEIPTS FOR MONEY. We send no receipt for subscription money. The change of the date on the little label shows you that the money has been duly received and credited. During December and January it sometimes takes us three or four weeks before the date is changed.

RATES OF ADVERTISING. These will be furnished on application.

Trial Subscriptions.

3 Months, 15c; 6 Months, 25c.

We offer GLEANINGS IN BEE CULTURE to new subscribers three months for 15c, or 6 months for 25c. Renewals not accepted at these rates.

Clubbing Rates.

As an inducement for our subscribers to renew before the expiration of their present subscription, which saves us considerable time, we offer the following rates for Gleanings one year and a year's subscription to any of the following papers at prices mentioned:

For One Dollar Only.

Gleanings and your choice of the following:
American Agriculturist, with Almanac,
Orange Judd Farmer, with Almanac,
N. E. Homestead, with Almanac,
Northwestern Agriculturist,
American Poultry Journal,
Reliable Poultry Journal,
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Poultry Keeper.
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For One Dollar and Ten Cents.

Gleanings and your choice of the following:
Practical Farmer,
Michigan Farmer.
Prairie Farmer,
Ohio Farmer.

For $1 25.—Gleanings and Rural New-Yorker.
For $1.30.—Gleanings and National Stockman.
For $1.50.—Gleanings and Cosmopolitan or McClure's Magazine or American Garden.
For $2 00.—Gleanings and Country Gentleman.
For $2 50.—Gleanings and Review of Reviews.
For $2.00.—Gleanings and Pacific Rural Press.
For $1.10.—Gleanings and Kansas Farmer.

These rates good also for new subscribers.

SEED DUE BILL FREE

To get new customers to test my **Seeds,** I will mail my **1900 Catalogue,** filled with more bargains than ever and a **10c Due Bill** good for **10c worth of Seeds** for trial **absolutely free.** All the **Best Seeds, Bulbs, Plants, Roses, Farm Seeds, Potatoes, etc.,** at lowest prices. **Nine Great Novelties** offered without names. I will pay **$50. FOR A NAME** for each. Many other novelties offered, including **Ginseng,** the great money making plant. Over 20 varieties shown in colors. **$1100 in cash premiums offered.** Don't give your order until you see this new catalogue. **You'll be surprised** at my bargain offers. Send your name on a postal for catalogue today. **It is FREE to all.** Tell your friends to send too.

F. B. MILLS, Box 105 Rosehill, Onondaga Co., N. Y.

In writing, mention Gleanings.

Ferry's SEEDS

grow paying crops because they're fresh and **always the best.** For sale everywhere. Refuse substitutes. Stick to **Ferry's Seeds** and prosper. 1900 Seed Annual free. Write for it.

D. M. FERRY & CO., Detroit, Mich.

50c. SEED DUE BILL FREE

Send me today, your name and address, on a postal and I will mail you **free,** my Handsome Illustrated Seed Catalogue containing **Due Bill** and plan **good for 50c. worth of Flower or Vegetable Seeds Free.** Your selection, to introduce the

Best Northern Grown Seeds,

DIRECT FROM GROWER TO PLANTER,

from Saginaw Valley Seed Gardens. Seed Potatatoes, Vegetable, Flower, Field Seeds and Plants.

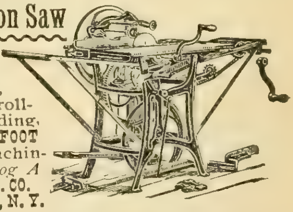
100,000 Packages Seeds FREE

on above plan. Write quick. Send names of your neighbors who buy seeds. $100 cash for best list. See catalogue.

HARRY N. HAMMOND,
Seedsman, *Box 69.* ***Fifield, Mich.***

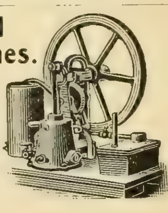
In writing, mention GLEANINGS

Union Combination Saw



For Ripping, Cross-cutting, Rabbeting, Mitering, Grooving, Gaining, Boring, Scroll-sawing, Edge-moulding, Beading. Full line FOOT and HAND POWER machinery. *Send for catalog A*
SENECA FALLS MFG. CO.
44 Water St., Seneca Fs., N. Y.

Pierce FARM Engines.



3-4 and 1 H. P. For Separators, Churns, etc., Stationary to 20 H. P. Pumping Engines all sizes. Send for circulars stating size and for what use.
PIERCE ENGINE CO.,
BOX 17, Racine, Wis.

PEACH **Grand lot of trees,** free from borers, aphis, scale, yellows, etc. Large stock of **Pear, Plum, Cherry, Apple, Quince,** etc. Immense supply of small fruits. Headquarters for

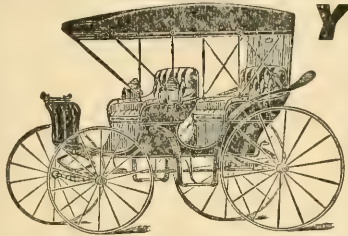
Ornamental Trees, Shrubs, Plants, Bulbs, Seeds.

40 acres hardy Roses, 44 greenhouses of Palms, Ferns, Ficus, Roses, Geraniums, etc. Mail size postpaid. Direct deal will save you money. Try us. Elegant catalogue free. **46th Year. 1000 Acres.**

THE STORRS & HARRISON CO., Box 741, Painesville, O.

Your Whole Family

Would Be Satisfied

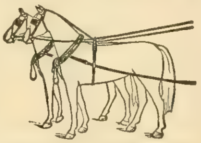


No 707—Extension Top Surrey, with double fenders. Complete with side curtains, aprons, lamps and pole or shafts. Price, $80. As good as sells for $40 more.

with one of these surreys. They are **handsome, strong, stylish, easy riding** and **durable.** Selling on our plan you can **examine it thoroughly before you are required to buy it.**

WE HAVE NO AGENTS

but sell all goods direct from our factory to the purchaser at wholesale prices. **We are the largest manufacturers of vehicles and harness in the world selling to the consumer exclusively.** We have pursued this plan successfully for 27 years. You assume no risk as we ship our goods anywhere for examination and guarantee safe arrival. Largest selection in the country as we make 178 styles of vehicles and 65 styles of harness. Catalogue free.



No. 180—Double Buggy Harness, with nickel trimmings. Price complete with collars and hitch straps, $22. As good as sells for $30.

ELKHART CARRIAGE AND HARNESS MANUFACTURING. CO., ELKHART, INDIANA

In writing advertisers, please mention Gleanings.

LOTS OF EGGS **MEANS LOTS OF MONEY.**

If you can double the eggs you double the money. **Green Cut Bone is the only thing which will double the egg product.** It is easily secured, easy to prepare and feed and is cheap.

MANN'S NEW BONE CUTTERS

are the difference between profit and loss in the poultry business. **Cut fine, fast and easy. Mann's Clover Cutters, Granite Crystal Grit and Swinging Feed Trays make the** business profitable. Catalogue free. **F. W. MANN CO., Box 37 MILFORD, MASS.**

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DO YOU WANT TO MAKE SOME MONEY?

OUR PRIZE-WINNING White Leghorns, Barred and Buff Plymouth Rocks, Buff Cochins are money-makers. Utility and fancy combined. Friends, they will help to lift that mortgage. One thousand fine birds for sale at reasonable prices. Satisfaction guaranteed. Catalog free.

CRESCENT FARM, : BOX W, KENT, OHIO.

E. T. BLOOD, MANAGER.

The 20TH CENTURY POULTRY BOOK

is the very latest, up-to-date authority on the poultry business in this country. It treats the entire subject in a masterful way drawn from years of ripe experience in conducting the largest pure blood poultry plant in the country. Treats incidentally of the newest and best things about the world famous **Reliable Incubators and Brooders.** Sent to anybody for 10c to cover postage. **Reliable Inc. & Brooder Co.. Box B 49 Quincy, Ill.**

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HATCH CHICKENS

BY STEAM—with the simple, perfect, self-regulating

EXCELSIOR INCUBATOR

Thousands in successful operation. Lowest priced 1st-class hatcher made.

Circulars free.
Send 6c. for
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GEO. H. STAHL,
114 to 122 S. 6th St., Quincy, Ill.

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310 First Premiums

Awarded to the **PRAIRIE STATE INCUBATOR.** Guaranteed to operate in any climate. Send for catalogue.

PRAIRIE STATE INCUBATOR CO. Homer City, Pa.

1200 FERRETS FOR SALE. Small, medium, and large sized; some trained. **First-class** stock. New price list free

N. A. KNAPP,
Rochester, Lorain County, Ohio.

HATCHING IN 10 DAYS

would be an improvement on the old way, but WE can't do it. We CAN furnish an **INCUBATOR that will hatch** all hatchable eggs, and do it with less attention than any machine made. It does it because it is made right and has all late improvements. Sold at a low price and guaranteed. **Catalogue in 5 languages. 6 cts.**

DES MOINES INCUBATOR CO., Box 503 Des Moines. Ia.

IT COST US $4,000 Costs You 15c

We have spent $4,000 on our new book, "**How to Make Money with Poultry and Incubators.**" It tells it all. Leading poultry men have written special articles for it. 192 pages, 8x11 in. Illustrated. It's as good as

Cyphers Incubator

—and it's the best. Out hatch any other machine. 16 page circular free. Send 15 cts. in stamps for $4.000 book No. 74.

SELF SUPPLIED MOISTURE. SELF-REGULATING. SELF-VENTILATING

Address nearest office. **CYPHERS INCUBATOR CO**

Chicago, Ill. **Wayland, N. Y.** **Boston, Mass.**

Kid Gloves

This Time.

Owing to the generous response to our two previous advertisements on the subject of Handkerchiefs, and realizing that each response has made us a customer, we want to put you right on the Kid Glove question. Send to us for price and samples of any dry goods you may want.

Our Service Glove.

This we claim to be the best real kid glove ever made to retail at $1.00, and it is worthy its name. We have taken special pains in its selection. It is made of real kid—a two-clasp glove fastened at the wrist by two patent fasteners or five hooks as desired.

Price, postage paid, $1.00.

Our Lucile Glove

Is just a little better made, a little more stylish, and is the equal of any $1.50 glove ever sold. Two clasps or five hooks, as desired.

Our price, by mail, $1.25, postpaid.

We can furnish you any shade of color or size you desire. Just send us a sample of goods you want matched, and we will match it in a kid glove.

F. E. EDWARDS & CO.,

Dept. H. MEDINA, OHIO.

References.—The A. I. Root Co., and Medina County National Bank.

In writing, mention Gleanings.

CONVENTION NOTICES.

The annual meeting of the New York State Association of Bee-keepers' Societies will be held in the parlors of the Kirkwood, Geneva, N. Y., Jan 10, 1900, at 11 A. M. All bee-keepers' societies in the State are hereby notified, and requested to send delegates. An urgent invitation to attend is also extended to everybody interested in apiculture. By order of the

PRESIDENT.

CALIFORNIA BEE-KEEPERS' CONVENTION.

The tenth annual convention of the California State Bee-keepers' Association will be held in the Chamber of Commerce, at Los Angeles, on Feb. 21 and 22, 1900. Convention will be called to order at 1:30 P. M., on Feb. 21. At this time the railroads will sell round-trip tickets to everybody, for one and one-third fare, on account of the Industrial, Mining, and Citrus Exposition, which will be held in Los Angeles. Tickets good for ten days. Let every bee-keeper bring some hive, tool, or experience which he has found valuable, and we will have a good convention.

R. WILKIN, Pres.
J. F. M'INTYRE, Sec.

Advertiser's Department of Short Write-ups.

The Planter's Dependence on Good Seeds.

Without good, fresh, fertile seeds, good crops are impossible. It is, then, of the most vital importance that you should exercise the greatest possible caution in selecting the seeds you are to plant the coming season. Since you cannot determine their fertility or freshness by sight, the only certain way to insure yourself against worthless seeds is to buy only those that bear the name of a firm about whose reliability there is no question. There are no better known seedsmen anywhere, and none who have a higher reputation for integrity, than D. M. Ferry & Co., of Detroit, Mich. Ferry's seeds have been a synonym for good seeds for many years. Thousands of gardeners who continue to plant them season after season do so with the full confidence that they will uniformly be found to be of high vitality, and, most important of all, true to name.

Ferry's Seed Annual for 1900 is fully up to the standard of former years, and will be welcomed by all who have learned to regard it as a thoroughly reliable and practical guide to planting. A copy may be obtained free by addressing the firm as above.

KIND WORDS FROM OUR CUSTOMERS.

GLEANINGS grows brighter and brighter, and it makes pleasant evenings for both me and my wife.

LEON A. STAFFORD.

Blodgett Mills, N. Y., December 7.

GOOD FOR LOS ANGELES.

On page 877 you ask if Los Angeles has adopted a reform like that of Detroit. I will say it did some time ago, and it has a heavy fine for expectorating on the sidewalk ; so I shall expect to see you soon in the "City of the Angels." WILL R. SHIELDS.

Los Angeles, Cal., Dec. 11.

May the good work spread to every town and city in the country.

SATAN'S "NEW METHODS."

Mr. Root:—I have been very much interested in your "Home Talks," and especially so when you exposed Satan, for you hit the nail on the head. I am sorry to say that the powers of hell are working with a very strong force in this city. Only lately the papers reported five suicides and two attempts, and one murder and two attempts, all during one week, and in this place. Spiritualism, too, is misleading many people here. It seems as if Satan had invented and introduced a new mode, by which he can do more mischief than by all other crimes combined.

Denver, Col., Dec. 4. NICHOLAS BISSON.

I chanced to find a swarm of bees one Sunday morning, and succeeded in taking them home, and became greatly interested in them, and seeing an advertisement I sent for a copy of GLEANINGS. To my surprise I found the editor was a Christian, and had prospered. I was weak, gave up to my temper, and at times used the worst language I could think of ; but I thank God and GLEANINGS that I am better now, and I shall continue to thank them every night as long as I live. I wish I could help you in your good work against the liquor-traffic, but I can't do any thing at present but let it alone myself, and pray for every person in the land to do the same. Tell the readers of GLEANINGS that one poor man has been saved from a drunkard's grave—saved from the torment of that lake of fire and brimstone that God has told us to shun.

Dixie, W. Va., Sept. 23. JOS. N. SMITH.

QUEENS TO AUSTRALIA FROM MEDINA.

Just a hurried note, to say the two queens sent by you were duly received. The golden queen had four bees alive with the queen, and the three-banded queen was dead. The cages were in splendid condition on arrival. They were very clean, free from any stains, and no loose grains of sugar. About two-thirds of the candy was consumed in each cage, and a part of the honey. You must have some secret process to prepare candy of coarse sugar, and yet be so soluble that the bees do not tear it out. I consider your situation in the States places you in a better position for shipping queens to Australia than any other breeder I visited on my trip. You are able to get them off on a direct route, and no part of the journey is extreme in climate as with some other breeders. W. S. PENDER.

West Maitland, N.S.W., Sept. 26.

[We have no secret process of candy-making. What we use is nothing more nor less than the Good (or Scholz) candy. We are careful to get pure cane sugar, powdered—not sugar and starch, in a combination known hs confectioners'. This is what kills bees, but is just the thing for frosting on cakes. There is another important requisite—and that is, the art or knack of mixing the honey and the sugar—just as there is a knack in making bread.—ED.]

SEE THE PICTURES!

THE BEE-KEEPERS' REVIEW for December is the finest issue of that journal that has ever been gotten out. It contains over fifty pages; and the extra pages are largely devoted to illustrations. The frontispiece is "The Home of the Review," as shown by a late photograph. There is a full-page illustration of an apiary in the wilds of Wisconsin. It shows the log home of its owner, and the old pineries that furnish the bee-pasture. There is one picture that goes clear across two pages, and shows an apiary of 300 colonies in Heddon hives — all very neat and tasty. There is a half-page picture giving a glimpse of a portion of South Water street, Chicago—the great honey market of the West. It is a snap-shot, taken a little past mid-day. One half-page cut shows an apiary snugged away at the foot of the great bluffs forming the Kickapoo Valley of Wisconsin. There is a full page picture showing the house-apiary, apiary, and home of A. I. Root. The home of E. R. Root is also shown. There is a full-page cut of the factory of the W. F. and Jno. Barnes Co. There are also pictures of the factories of Jas. Forncrook, the G. B. Lewis Co., Aug. Weiss., H. Rienow & Son, Marshfield Mfg. Co., Page & Lyons, Interstate Mfg. Co., and Gus. Dittmer. All of these pictures, with one exception, are from photographs taken last summer by the editor of the REVIEW. There is not space to describe the reading-matter, except to say that it is in keeping with the engravings.

Send for $1.00 for the REVIEW for 1900, and this December issue, together with 12 other back numbers, will be sent you free.

W. Z. HUTCHINSON, = = = Flint, Mich.

Do You Want to Make More Money on Your Farm?

Of course you do, and the best way to do it is to find out how others who are more successful do it by subscribing for

THE PRACTICAL FARMER,

OF PHILADELPHIA, PA.

The most thoroughly up-to-date and practical agricultural weekly published. It leads the agricultural thought of the country. **It is the only paper for which T. B. Terry writes,** and is the only farm paper published whose contents are directly applicable in an intensely practical manner to the every-day work on the farm. Its editors comprise the leading agricultural writers of the country

Its Unique Special Departments: Short Cuts; Mistakes, Failures, and Successes; Experience Pool; Farm Implement Annex, and Postal Card Correspondence, all supported by contributions from its subscribers, keep it in direct touch with its readers every week in the year. In addition, it has departments ably edited by the acknowledged experts in their various lines, devoted to the following subjects: Garden, Stock and Dairy, Horticulture, and Home Circle. Complete and reliable market reports every week. In fact, it contains every thing that goes to make it the best, brightest, and most practical agricultural paper published. **Subscription price, $1.00 per year.** Sample copies free for the asking.

THE PRACTICAL FARMER'S SUPPLY-CATALOG contains hundreds of useful articles for the home and on the farm, and at prices that will astonish you. Send for a copy. The price is a postal card addressed to The Farmer Co., Philadelphia, Pa.

Special Offer. By a special arrangement with the publishers of THE PRACTICAL FARMER we are enabled to offer both it and GLEANINGS until January 1, 1901, for the small sum of $1.10. Address all orders to GLEANINGS.

BEES AND QUEENS.

Either Golden Italian, 3-banded Italians, or Holy Lands, your choice. Nothing but the best of stock bred in 3 different yards, several miles apart. Send for circular and price list. It gives methods of queen-rearing, honey production, etc. Prices, either race: Untested, March, April, and May, $1 00 each; 6 for $5 00; per dozen, $9 00. Tested, $1.50; 6 for $8.00; per doz., $15.00. Untested, June, July, Aug., and Sept., 75c; 6 for $4.25; per doz., $8.00. Tested, $1.25; 6 for $6 75; per doz., $12.00. Special discount in large quantities. Breeding queens a specialty

O. P. HYDE & SON, Hutto, Texas.

REMOVED!

EARLY QUEENS. W. H. Laws has removed his entire queen-rearing apiaries to Round Rock, Texas, where he will be better fitted than ever to fill orders for the LAWS strain of FAULTLESS 5-BANDED bees the coming season. BREEDING QUEENS always on hand. Price $2 50 each. I am also breeding the leather-colored stock from imported mothers. Tested queens, either strain, $1.00; 6 for $5.00; untested, 75c; 6 for $4.00. Queens ready in season.

W. H. LAWS, Round Rock, Texas.

Root's Goods for California.

We have just received a large carload of sections, extractors, smokers, veils, etc., direct from the factory, and are prepared to supply bee-keepers with the same promptly. Do not send a long distance and pay high freights. Write for our prices.

M. R. MADARY, - Fresno, California.

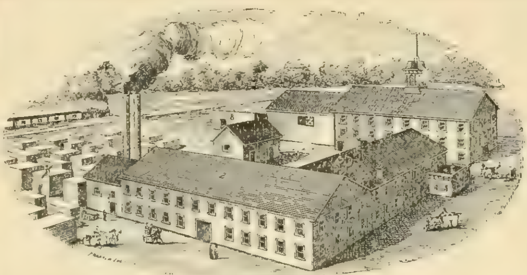
DON'T ***ROB YOUR NEIGHBOR***

By buying a poor fence that will let your stock fatten on his crops. The **KITSELMAN FENCE** is a satisfactory one. It insures good sleep and makes good neighbors. Free Catalogue telling how to make 100 Styles at the actual cost of the wire. Write to-day.

KITSELMAN BROTHERS,
Box 51 Ridgeville, Indiana, U. S. A.

In writing, mention GLEANINGS.

WANTED.—To exchange bicycles, tandems, etc., for all kinds of machinery, tools, etc., or comb honey. ROBERT B. GEDYE, La Salle, Ill.



BEE-SUPPLIES!

We have the best-equipped factory in the West. Capacity, one carload a day; and carry the largest stock and greatest variety of every thing needed in the apiary, assuring BEST goods at the LOWEST prices, and prompt shipment. We want every bee-keeper to have our FREE ILLUSTRATED CATALOG, and read description of Alternating Hives, Ferguson Supers, etc. *Write at once for a catalog.*

We also manufacture TANKS of either wood or galvanized steel, all sizes, any form, and for all purposes. Price list free.

E. KRETCHMER, : : RED OAK, IOWA.

PRICES OF

Bingham Perfect Bee-smokers and Honey-knives.

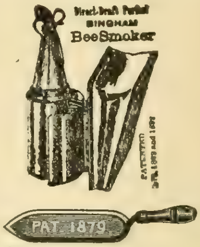
Smoke Engine (largest smoker made.)	4-inch	stove.	Doz.	$13.00;	each, by mail,	$1.50
Doctor	3½-in.	"	"	9.00;	"	1.10
Conqueror	3-in.	"	"	6.50;	"	1.00
Large	2½-in.	"	"	5.00;	"	.90
Plain	2-in.	"	"	4.75;	"	.70
Little Wonder (wt. 10 oz.)	2-in.	"	"	4.50;	"	.60
Honey-knife			"	6.00;	"	.80

Bingham Smokers have all the new improvements. Before buying a Smoker or Knife, look up its record and pedigree.

FIFTEEN YEARS FOR A DOLLAR; ONE-HALF CENT FOR A MONTH.

Dear Sir:—Have used the Conqueror 15 years. I was always pleased with its workings, but thinking I would need a new one this summer I write for a circular. I do not think the 4-inch Smoke Engine too large.

January 27, 1897. Truly, W. H. EAGERTY, Cuba, Kansas.



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The Ohio Farmer, Cleveland, Ohio.

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Honey Column.

CITY MARKETS.

ALBANY.—Honey in light supply and good demand. We quote fancy white, 15@16; No. 1 white, 14@15; mixed, amber and dark, 11@14. Extracted white, 8@8½; amber, 7@7½; dark, 6@6½. Beeswax, 25@27.
McDOUGAL & CO.,
Successors to Chas. McCulloch & Co.,
Jan. 8. Albany, N. Y.

SPRINGFIELD.—Honey is selling slow. No. 1 white clover is selling at 18; buckwheat, 11@12.
PERKINS & HATCH,
Jan. 8. Springfield, Mass.

CINCINNATI.—The demand for extracted honey has eased off since the holidays, with prices about as follows: Fall and southern extracted, 6@7; clover, 7@8½; good demand for fancy white comb honey at 16@17. Beeswax, 26.
C. H. W. WEBER,
Successor to Chas. F. Muth & Son,
Jan. 8. 2146-48 Central Ave., Cincinnati, O.

CHICAGO.—We quote best white comb, 15; an occasional small lot of fancy sells at 16; off grades of white, 12@14; amber, 10@12. Extracted, 8@9 for fancy white; amber, 7@8; dark grades, 6@7. Beeswax, 27. Receipts are larger, and the demand is not as good as it has been.
R. A. BURNETT & CO.,
Jan. 8. 163 S. Water St., Chicago, Ill.

COLUMBUS.—Demand for all grades of comb honey very good. Receipts light. Fancy white, 16; No. 1 white, 15; amber, 11@12.
EVANS & TURNER,
Jan. 8. Fourth and Town Sts., Columbus, O.

KANSAS CITY.—The demand for both comb and extracted is fair; supply not large. We quote No. 1 white comb, 13½@14; No. 1 amber, 13@13½; No. 2 white, 13; No. 2 amber, 12½. Extracted, white, 8; amber, 7½. Beeswax, 20@22.
C. C. CLEMONS & CO.,
Jan. 9. Kansas City, Mo.

NEW YORK.—Trade rather quiet at present, though market remains firm at unchanged prices on all grades of comb and extracted honey. Beeswax is improving, and is in good demand at 28.
HILDRETH & SEGELKEN,
Jan. 9. 120, 122 West Broadway, New York.

PHILADELPHIA.—Honey has been selling quite freely, but the supply seems to keep up with the demand. We quote fancy comb, 15@16; No. 1, 13@14; no No. 2 or buckwheat in our market. Extracted, white, 8@10; amber, 7@8. Beeswax, 26. We are producers of honey—do not handle on commission.
WM. A. SELSER,
Jan. 9. 10 Vine St., Philadelphia, Pa.

WANTED.—Comb and extracted honey. State price, kind, and quantity.
BLAKE, SCOTT & LEE,
57 Chatham St., Boston, Mass.

WANTED.—Your honey. We will buy it, no matter where you are. Address, giving description and price.
THOS. C. STANLEY & SON, Fairfield, Ill.

WANTED.—Comb and extracted honey. State price, kind, and quantity.
R. A. BURNETT & CO.,
163 South Water St., Chicago, Ill.

WANTED.—Extracted honey of all kinds. Mail sample, and price expected delivered at Cincinnati. I pay spot cash on delivery.
C. H. W. WEBER,
Successor to Chas. F. Muth & Son,
2146-48 Central Ave., Cincinnati, Ohio.

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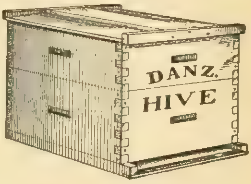
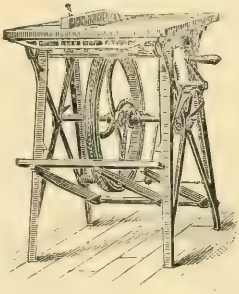


Root's Goods in Kansas.

Carl F. Buck, Augusta, Butler County, Kansas.



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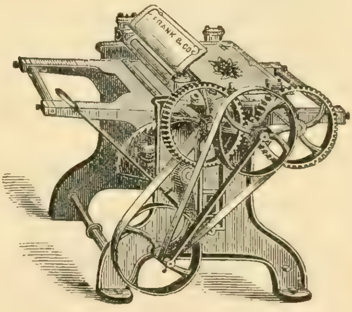

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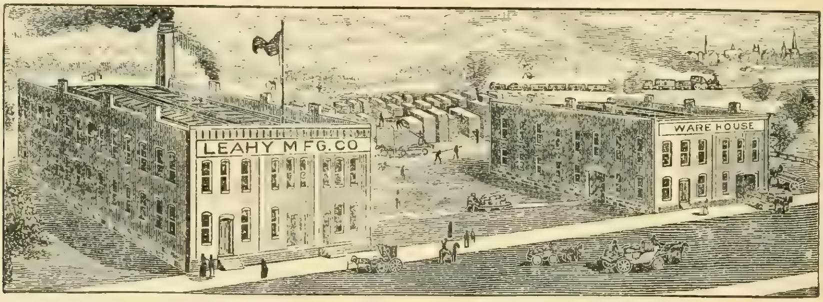

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A Journal devoted to Bees and Honey and Home Interests.

Illustrated Semi-Monthly
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$1.00 per Year
Medina, Ohio.

Vol. XXVIII. JAN. 15, 1900. No. 2.

STRAY STRAWS

FROM DR C. C. MILLER

DOOLITTLE has painted that picture of a bee-cellar to the life, p. 17. I never thought before to see how many bees would fly out in a given time. To-day, Jan. 5, I went down cellar. Air sweet—45° ; listened by the watch full five minutes — not a bee flew. Different story two months later. Five bees fly out then to one now.

IN REPLY to friend Crane's question, p. 13, I'm afraid *Tilia petiolaris* is only two weeks later than the European linden. Yet if no later than the American, why should the British make so much fuss over it? Surely they ought to be familiar with any superiority the American may have, and it can be had at low prices compared with the new comer.

A BEE-KEEPER writes that the T tins made by The A. I. Root Co. are too weak, and asks where he can get the old-fashioned kind. I told him I felt sure he could get the kind desired by so ordering from Medina. [Our T tins are made heavier than formerly ; but if our friend were to order ordinary stock he would probably get just what he desires.—ED.]

I'VE BEEN LOOKING through the latest A B C. What a misnomer is the name ! To be sure, it gives the abc's ; but it doesn't stop there, and goes right on up through the fifth and sixth reader. I'm afraid beginners hardly realize what a treasure they have in such a work. How much it would have been worth to me when I began working with bees, and how many wrong moves it would have saved me, it is hard to estimate.

IN REPLY to that question, p. 6, it does seem remarkable that sweet clover grows everywhere and yields everywhere. The only exception, I think, on record is that of Mrs. Harrison, who couldn't get it to grow in Florida. Just possibly, if she should accidentally drop some seed there where it was not wanted it might make a luxuriant growth. [That is just it. If Mrs. Harrison could just accidentally drop some seed where it was not wanted it would surely grow.—ED.]

W. WINTERTON says in the *British Bee Journal* that, in Root's A B C, *Symphoricarpus racemosus* is called "*Snowdrop*," no doubt in error for "Snowberry." Our British friend will hardly accuse the A B C of error if he will remember that, while botanical names are the same the world over, popular names are not always the same in two different countries. In the United States tongue, "Snowdrop" is the correct popular name.

MR. EDITOR, I don't see that I can get up any quarrel with your political platform, p. 6. Whenever you can get enough to stand with you—and the current seems to be setting that way — the day of doom has come for the saloon. [Yes, the current is setting that way very rapidly. The time will soon come when politicians will have to dance to the music of the churches rather than to the music of the saloons. The saloon has had, and even now has, a strong "political pull" on our legislators ; but as sure as there is to be a millennium, just so sure the day of better things will come ; and then only good clean men can get into office.—ED.]

MR. EDITOR, you say, p. 20, that when bees quiet down in cellar after a fire has been started, no one can state definitely how much of the trouble was due to cold and how much to foul air. Quite right. But I'll tell you one case in which you can tell definitely. Temperature in cellar 50° ; same outdoors. Bees noisy. Fire started toward evening, running temperature to 60°. Next morning bees still, with thermometer 50° inside and out. Foul air had all to do with it in that case. [That is a clear case ; and the fact being established in *this* case, it will be reasonable to assume that in the other cases foul air is equally the disturbing cause.—ED.]

FORMERLY I kept my bees in two cellars, with the belief that the fewer bees the purer the air. I've changed my practice for the past few winters, and am shaky as to my former belief. I now cram all the bees into one room of my house-cellar — less trouble to watch, and so many bees keep it warm enough so fire is not often needed. The warmer cellar makes better ventilation. [In a cold locality like that of Marengo, I am rather of the opinion that a large number of colonies in the cellar is more conducive to good results than a small number; but in the vicinity of Medina, where we have so much open winter (like spring to-day, Jan. 6), and the weather outside is even warmer than the atmosphere of the cellar, then a small number of colonies will give a better result.—ED.]

WHILE READING about the trouble with hive-covers in Colorado I wondered if my tin covers with dead-air space wouldn't fit their case. Two years' trial of fifty of them makes me like them. [But even in Colorado there is a trouble about the tin-covered hive-tops. It is the *warping* and *twisting* of the boards, and not the possible leaking while in the rain. Why, it is very seldom that there is any rain at all in Colorado. If a cover could be made all of metal, or of some other material, which the sun's rays could not affect, then we should have the *ne plus ultra* for Colorado, providing, or course, that such a cover would not be too expensive.—ED.]

FRIEND A. I., you say, p. 20, that you didn't raise John's wages *because* he had never used tobacco. Likely not; but you can say to those boys that there are cases where a boy gets less *because* he uses tobacco; and in any case, the amount spent on tobacco is just so much of a slice constantly taken off his wages. Just let him figure up how much it will amount to by the time he is 50 or 60 years old if he puts out at interest the sum paid out each year for tobacco, and it may open his eyes. [My tobacco money has all gone into life insurance, and I now have a $5000 life-insurance policy *all paid up*, and which in ten years more, if I live, without another payment will be worth nearly $9000.—ED.]

JUST A BIT humiliating, Mr. Editor, after your kind words, p. 20, to own up that I've had no sub-ventilator in use for a few winters. I had doubts as to the *quality* of the air that entered; and when the sub-ventilator got clogged up I didn't open it again. But I'm just as strong a believer as ever in a cellar fire, whenever it's too cold, and sometimes I want the fire for ventilation only. [Verily, the last prop is knocked out from under the sub-earth ventilator. Dr. Miller, for the last few years, has been the only consistent and persistent advocate of this device for wintering bees; and now that he—even *he*—has abandoned its use, we may as well relegate it to the fads of the past. It promised much, but accomplished little. *Requiescat in pace.* I suppose now I'll have to obliterate all reference to the sub-earth ventilator from the next edition of the A B C.—ED.]

IT IS ENCOURAGING to note that a number of bee-keepers are beginning to be on the lookout for improvement in bees. If every bee-keeper would breed only from his best, both queens and drones, a general improvement would soon be manifest. And while effort is made in that direction, the probability is that the greatest improvement will come here and there from some sport, as it is called—some colony that specially distinguishes itself from its fellows with no apparent reason for the distinction. So it becomes us all to be on the alert, for there's no telling who may be the fortunate one. [That $100 offer has certainly started the tide for better queens. When breeders will pay anywhere from $10 to $15 for a good queen, and think nothing of it; and when perhaps they would give $25 for something extraordinary, the strife will be, not for beauty nor golden-yellow bands, but for business. We have five or six queens in our apiary now for which we would not take $25 apiece.—ED.]

J. E. CRANE says his 5×4¼×1¼ plain sections not perfectly filled averaged 14½ oz. I had a few hundred that seemed pretty well filled, and they weighed 13.82 oz. Next year mine may be heavier than his. They don't look like "great slabs of honey" as much as you might think, Mr. Editor, and I'm rather sorry to say they're nice-looking. [I am inclined to think that there is going to be a future for the 5×4¼×1¼ plain section. The tendency now seems to be toward a large comb surface, shallow cells, and very near full-pound weights. There can be nothing dishonest in this; and if the comb honey itself is beautiful, the more of it we can see the better. If honey in shallow cells ripens better (understand I do not claim that it does), then combs with large surfaces are the ones to produce. But the 5×4×1¼ does not *quite* make 1 lb., on the average. If there are those who want the full pound, then the same section, 1⅜ instead of 1¼, is the one to select. In some markets, I imagine, there would be a demand for *guaranteed full pound* sections; and the 5×4¼×1⅜ would give us just about 16 ounces.—ED.]

RAMBLER'S wild dream about the automobile, p. 15, may not be all a dream. The one item of hauling bees without having any horses around would be a big thing. After all these years I haven't become so hardened to it that I don't breathe a bit easier each fall and spring when the hauling is over. [It is quite within the range of the present day, and not in the very distant future either, that automobiles will be used for hauling honey to the home apiaries. I myself have been using the horseless wagon (the bicycle) for toting hives and hive parts down to our out-apiary. Why did I use it? Because I have had some expensive experience with horses at an outyard. As you may remember I lost one—a horse for which I paid $125, and on the day of his death (a month or so after) I was offered $175. He died while hitched at one of our out-yards. It is supposed that a bee stung him, for he broke the shaft diagonally in two, and in some unaccountable way pushed the sharp end clear through his heart. On that day my enthusiasm for horse flesh suffered a collapse; and had it not been for the loss of that animal, and the possible profit of $50, I *might* have been a "hoss jockey" to-day. But, joking aside, in this issue Rambler speaks about the difficulty of getting honey from the mountain fastnesses of California. Some time the day will come when horseless carriages will haul stuff up and down those almost inaccessible mountains at a comparatively slight expense.—ED.]

PICKINGS
FROM OUR NEIGHBORS' FIELDS.
BY "STENOG."

Now snow, now blow, now raw, now thaw;
  Now hail, now shine, now sleet;
And so the bees one day 'most freeze—
  The next, have summer heat.

AMERICAN BEE JOURNAL.

A very thorough index goes with the last issue for 1899.

* * *

Hon. Eugene Secor has received a can of honey from Athens, the honey itself having been gathered on classic Mt. Hymettus.

* * *

C. Davenport says a distance of only a mile may make a great difference in the rotting of hives. He considers it a good plan to soak the boards in strong lime water.

* * *

"Old Grimes" says where a location is subject to winds, and even if it is not, a windbreak should be provided. Cold winds are disastrous to an apiary in early spring.

* * *

Hasty well says: "What an appetite for camels most of us have! Our government abolished the national cock-fight the minute it got to Manilla, and introduced—the American saloon!"

* * *

Here is a short history of the Old Reliable: Founded by Samuel Wagner in 1861. He died Feb. 17, 1872. His son conducted it till Jan. 1, 1873, when Rev. W. F. Clarke secured control of it and took it to Washington. In 1874 T. G. Newman took hold and conducted it till June 1, 1892, when Mr. York took control.

* * *

At the Utah convention Mr. Hone said he had cured pickled brood by using salt and sulphur. He thinks the dairy business is detrimental to bee-keeping, as cattle eat sweet clover and other flowering plants off the land. Mr. Schach said he had cured pickled brood by a free use of dry slacked lime and salt, scattering all through the hive. He said it cleansed and purified the bees, and kept down disease. Sec'y Fagg said that twice this season he had caught the bees killing their old queen, and concluded that the subject of requeening could be left to the bees.

* * *

In speaking of birds as enemies of bees, H. L. Jones, of Australia, says:

> The green oriole has, however, the honor of being the greatest gourmand in this line that I have yet encountered, and its capacity for stowing away bees and *stings* is simply marvelous. To secure its prey it sometimes settles on a hive and catches the bees as they fly home; at other times it darts from some convenient perch and takes the bee on the wing; but its most favorite plan is to locate itself in a fruit-tree, and either snatch up a bee as it alights on a blossom, or as it flies from flower to flower. In one of these little friends that I shot and made a post-mortem examination upon, I found 15 stings in the stomach, sticking into the lining of it, just like pins in a pin-cushion, some of them being very firmly implanted and imbedded almost up to the head. Another bird had no fewer than 27 stings imbedded in its alimentary canal, and also one sting with its poison-sac attached sticking loosely in its throat at the base of the tongue.

Mr. Jones finds the magpie a great bee-eater, but dislikes to kill so valuable a bird. The martin is a nuisance to the bee-keeper, but is easily killed on account of their habit of perching on a line all together, thus making a fine mark for a boy with a shotgun.

BRITISH BEE JOURNAL.

The issue for Dec. 28 starts out with an editorial tinged with deep sadness. England is engaged in a bloody struggle in South Africa, and so far has met with dreadful reverses. It is no place here to state just what is right, for no man on earth can do it; but the following extract is a good indication of the painful suspense in the hearts of our British neighbors. It reminds us of the dark days of 1862 in this country:

> The closing days of the year and of the nineteenth century are, for the people of this kingdom, shadowed by clouds which, though soon to roll away—as clouds always do—and be succeeded by sunshine, are still overhead as we write. . . . It is with some sadness that we wonder what becomes of the *British Bee Journals* sent regularly every week to South Africa, where there is at present, unfortunately, no peace, and where a word of sympathy in these closing lines of our twenty-seventh volume will have but small chance of reaching those subscribers whose "Homes of the Honey-bee" are, or were, located where war is now raging. Let us hope, too, that the end is not far distant, and that the final outcome of the terrible struggle now going on will be the securing of equal rights for all white men in that part of the world, and a full measure of justice for our darker brethren in South Africa.

* * *

Here is an account of what is probably the oldest honey-comb in the world. The story, which seems to be entirely accurate, was in a Cambridge paper:

> There is in the possession of Mr. W. Drake, of Broad street, Cambridge, a curiosity of great antiquity in the shape of a perfect honey-comb in the center of what was once an oak-tree, which, according to naturalists who have viewed it, is hundreds of years old; in fact, it is impossible to say what age the comb and tree may not be. The tree was raised on land in the occupation of Mr. Gale Cornell, of Brick-kiln Farm, Bottisham Lode. It had been known to be imbedded in the fen land for a long period, and when 6 ft. of peat had been taken off the surface, it was decided that the tree, which is of the species known as bog-oak, should be raised. It was found to be no less than 100 ft. long, and the men were in the act of splitting the tree into logs when, in the center of it, they came upon a honey-comb, which, with the oak, had been imbedded in the peat. The comb was in a perfect state of preservation, and dotted about it and lying at the base of the aperture were bees.

"Peat cages" are nothing modern, after all. It would be interesting to know when bees were first seen in England.

* * *

A picture of an old-fashioned apiary is given, consisting of five straw hives, owned by a Mrs. Booth. The apiary was started by her great-grandfather over 150 years ago, and has been run ever since without interruption, always on the female side. Talk about "simplicity" and Excelsior covers! This good lady uses old earthenware pannings, too much broken to be of use; old bottomless metal coal-scuttles supplemented by worn-out straw skeps, broken tiles, a box on edge, old sacks, rusty dripping-tins, pudding-pans, etc. It is good that an occasional relic of this kind has been preserved.

GENERAL CORRESPONDENCE

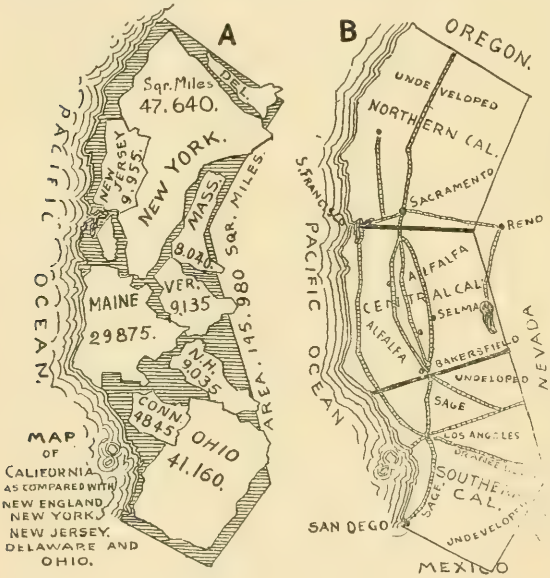
RAMBLE 181.

California; its Vast Honey Resources from which 300 Cars are sent in one good Season; where the Honey is Produced, and what Kind.

BY RAMBLER.

With the rains that have fallen so bountifully upon our charming western country there is a marked revival of the hopes of our bee-keepers; and this hopeful influence must be exerting an influence upon the fraternity in the far East; for letters are dropping down upon us making all sorts of inquiries about this country, and just as though we had never had a drouth.

It was naturally supposable that Cuba and the other islands that have been thrown open to the enterprise of our people would be the magnet to draw bee-keepers into new and untried fields; but it seems that, in spite of new domains and our dry seasons, California still has a magnetic influence; and as the aspects in the honey business are rapidly changing in this State it is no more than fair that we devote a little time and space to it.



MAP OF CALIFORNIA AS COMPARED WITH NEW ENGLAND NEW YORK. NEW JERSEY. DELAWARE AND OHIO.

I believe the boast has been made that California produces the largest honey crop of any State in the Union. I believe I have made some such remarks in the past myself.

We can estimate quite closely, perhaps better than almost any other State, as to the annual product. Our honey is shipped over a few transportation lines, and all we have to do is to look into the books of said lines; and when the grand total figures up to three hundred carloads, and in addition to this a large home consumption, perhaps we are justified in our boast for largest production, and may be further pardoned if we sail our hats a little when we reflect upon the long trains of honey that are leaving our State. But this exuberance is all the result of a good season, and we have to use this qualifying term, for we have our poor as well as good seasons. During the nine years I have been in Southern California, four of them have been total failures in honey production, while two others have been a partial success, leaving three good years in nine. Therefore, taking the average production during these nine years I have come to the conclusion that in a series of years California will make no better showing than some of the Eastern States. There is not much comfort in that for those who wish to come here to embark in the bee business; but let us look at the map of California, and make a few comparisons, review a little of the past, look at the present, and deal a little in futures.

For nearly 800 miles the western side of California is white with the spray of the Pacific Ocean. Measure off 800 miles on the Atlantic side of the continent, and it would include all the coast from Maine to Georgia. In area it equals the ten far Eastern States, as shown in the accompanying cut. Thus far the honey production in this vast area has been confined to a few favored localities, and there are wide stretches of country where a bee could not live; but the prospects are bright for these desert places becoming our most reliable honey districts.

The history of the bee industry in California is decidedly interesting, and shows many marked changes in the area of production; and those changes so favorably begun will go along with rapid strides. That the seeker for a good honey location in this State may know just where to look, refer again to the maps. I have divided the State into three parts—Northern, Central, and Southern.

The production of honey in California commenced in the Sacramento Valley, in the northern portion of the State. As the resources of the State became more generally known it was found that the southern end was far the best for honey, both in quality and quantity, and in that portion the industry has reached its greatest development, and the honey produced in the seven southernmost counties will ever hold the reputation gained for quality; for in no portion of the State is there the amount of various sages that are found here; and while the valleys have been put under cultivation, and the sages destroyed, the canyons and mountain sides are still its home, and there will always be very good pasturage, for the land can be used for no other purpose.

It is in this portion of the State where those phenomenally large yields have been produced;

but we can refer to them only as phenomenal, for they seldom occur twice in the same locality. These phenomenal yields have always been within the sage-belt, and from that source; and it is safe to say that, in the production of quantities of pure sage honey, California has seen its best days—but not its best days in the production of honey, mind you.

Referring to the little map of comparisons, we find that California has a population of a little over a million, while the Eastern States of the same area have sixteen millions. It is a foregone conclusion that the waste places in California will rapidly fill up with people, bringing changes in the products of the soil, and more of a diversity in the honey resources and in the quality of the honey.

That the honey resources of California are changing, and will increase to greater proportions than ever, can be easily demonstrated in Central California. In this portion of the State, where a few years ago the land was so barren that, upon hundreds of square miles, a bee could not live, there are now thriving farms and thousands of acres of alfalfa. Irrigation has made this great change. This area of alfalfa is now confined in a great measure to locations not at a great distance from the railroads. Outside of this area are thousands of square miles yet to be populated and brought under cultivation, and it is safe to say that alfalfa will be one of the principal crops.

We never hear of phenomenally large yields of honey in Central California, but they are blessed with something better — no total failures. The honey yield fluctuates more or less, as it does in all locations; but there is a reasonably sure income from the apiary every year; and the carloads of honey from Central California, which are already numerous, will steadily increase. In the eastern portion of the middle of the State we find Owens River Valley, not of great size. It is hemmed in by immense mountains, and here the bee-keeper produces alfalfa honey of the finest quality. Owing to location, or some other cause, the honey is of lighter shade than honey from the same source in other portions of the State.

The development of the honey resources in Northern California has not kept up with the development in the south. It is a mountainous country; and in those portions where honey can be produced, the cost of transportation to market eats too much into the profits to make it a paying business at the present prices of honey. It is safe to say that there is an area in Northern California equal to the area of New York State where there is not a carload of honey shipped; and where it is produced it is sold in the limited home market. It costs as much to ship honey from the Oregon line to San Francisco (a little over 300 miles) as it does from San Francisco to New York. There is a future, however, for Northern California honey production. With more and competing lines of transportation, more settlement of the waste places, and more alfalfa, carloads will begin to move out. Many of our prominent bee-keepers, even in Southern California, see in alfalfa the great and permanent honey-plant of the future.

This great forage plant is in direct accord with the interests of every agricultural community. Alfalfa first, cattle next. then the flowing of milk and honey, typical of the highest prosperity of a State.

California is justly noted for its immense fruit industry, and much has been said about this source of honey. However, it cuts but a small figure. The time of bloom is of short duration, and the secretion of honey not abundant. The orange-bloom, where the trees are abundant, gives a fair surplus; but it would not pay for the bee-keeper to depend wholly upon that source alone for his living.

At present the best locations for success in honey production in California are found all the way from the Sacramento Valley to San Diego; and the bee-keeper who intends to move to this State should write to the Chambers of Commerce in San Francisco and Los Angeles for literature giving much information about the respective ends of the State. In fact, it would be a good plan for almost anybody who would like to know more of the resources of this great State to send for this literature.

Then it would be a good plan for the emigrant, when he arrives, to take time to look the ground over. Ride by rail and wheel through the central portion of the State. The largest alfalfa districts are between Fresno and Bakersfield. Two weeks' time could be profitably spent in looking this field over, and a longer time could be spent in Southern California; for you can see, by referring to the map, that the great State of Ohio covers only about half of this end of California.

When a location is selected it is of the utmost importance that the occupant of it make up his mind to like his new home, and laud it to the skies upon any and all occasion. That is always the first duty of all true Californians.

I am sorry to know that some people are always cursing their lot and their surroundings. Well, we want no such people here. Their somber souls would be sadly out of place in this God-given land of health and sunshine; and wherever a number of such people congregate, there you will find a dead town and a well-filled graveyard.

In thinking over the matter of a change of residence, do not hesitate on account of health or old age, for this is a healthful climate, and, as Dr. Gallup has it, "It is the old man's paradise."

Taking it all in all, the bee-keeping industry of California has a brilliant future; and all the present members of the fraternity have to do is to stick to the business and hasten the day of great prosperity.

[This article from one who has rambled so extensively over the State, and who has studied its problems and resources so carefully, is, I think, the fairest and most comprehensive we have ever received. As we get so many inquiries from health-seekers and others who desire to change their bee-pasturages for something better, we have decided to make this into a pamphlet or leaflet, entitled, "California as a Honey Country," by John H. Martin. Price 2 cts. postpaid.—ED.]

HOME-MADE BICYCLE FOOT-POWER BUZZ-SAW.

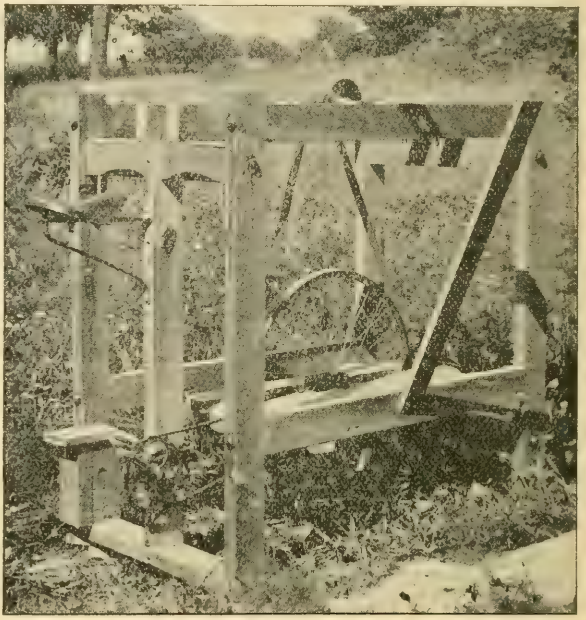
How to Build it; Something for Boys who have Nothing to Do.

BY C. H. PIERCE.

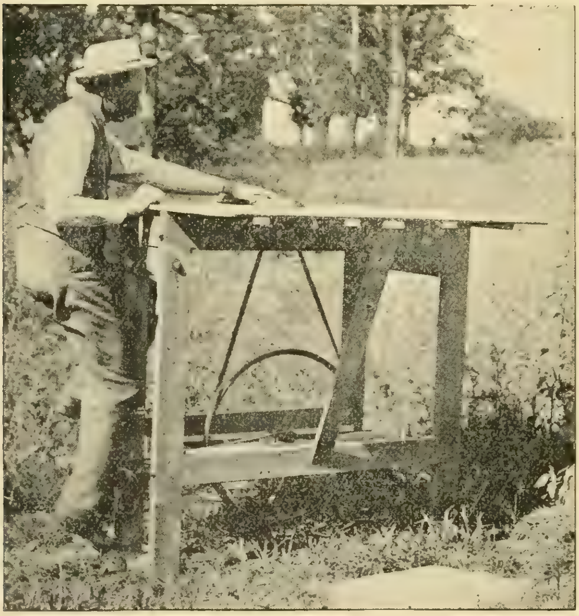
I inclose two snap-shots of my foot-power saw that I made early last spring, and have used this season. A glance at the two pictures will give a general idea of how it is made. It is the easiest-running foot-power saw I have ever tried. The saw revolves about 3500 times per minute. I use it and the parallel gauges. In cutting off I have to pedal backward; but to a man used to the motion of a bicycle, that is nothing. In ripping I change my saw and pedal forward, drawing all my stuff toward me with a stick with a short sharp brad in it. The boards, being all short, are just as easy to handle, and all dust is thrown from the operator. The fly (or belt) wheel is the rear wheel to a bicycle, and in place of the tire it has about 7 lbs. of lead run into the hollow rim to give the wheel weight.

Any one used to wheeling can sit in the saddle and work this machine with perfect ease. It would be just the thing for A. I. R. to keep his muscle up with this winter while waiting for the roads to open next spring.

Last week I sawed up and made 60 bodies, 20 covers, and 20 bottom-boards, and worked through only the middle of the day, while it was warm. In cutting up long boards I have a man hold up the far end of the board.



PIERCE'S BICYCLE BUZZ-SAW.



BICYCLE BUZZ-SAW IN OPERATION.

A. I. R. being such a wanderer, I would suggest he make his plans now for a trip next summer to Kilbourn City, the famed Dells of the Wisconsin, the home of the writer of this article. The latch-string hangs out, Mr. Root, and you will be shown some scenery the beauty of which you never dreamed of.

C. H. PIERCE.

Kilbourn, Wis.

[There are plenty of old cast-off out-of-date bicycles that can be bought for a mere song, that have seen their best days for the work for which they were made, but which would do as well for this purpose as the most up-to-date machine made. The illustrations, together with the description, make the whole so plain that any mechanic, or one handy with tools, can make a foot-power buzz-saw that will equal the best there is made. I personally tried this velocipede foot-power, as it is called, in my younger days, and know that it is very effective, and easy to run. That this no dead-center-crank movement is the best means of getting power from the legs is proven by the fact that it has supplanted all other mechanisms for bicycles, and is now the *only* movement.

Even if one buys most of his hive-fixtures he will find this machine very handy for a great variety of purposes, and it is just the season of the year to build it, when the weather outside will be too cold or bad to do any thing else.

If you enjoy this kind of work as I did once, you will get "just piles of fun out of it" as well as real profit. I sometimes wish I were free to go back to those old days now. Besides the pleasure derived, the experience gained in "making things" has been worth much to me in after-years; for now I am better able to understand mechanical constructions and possibilities, and I would not give up what I then learned in the *loft of that dear old barn*, where I spent many a happy hour alone with my tools, for half what I got out of my college days. Possibly if it had not been for these attractions and my mother's watchful eye I should have found pleasure on the streets, and then—I dare not think.—ED.]

A VISIT TO A CUBAN APIARY.

The Horse that Was Named "Coggshall" after Coggshall the Bee-keeper.

BY HARRY HOWE.

Senor Ernesto Aguilera, The A. I. Root Co.'s representative here, asked me to go with him to see one of his apiaries one day. When we started the party consisted of Senor Aguilera, Senor Smidt, the apiarist from another of Aguilera's apiaries; Fred Craycraft, who acted as interpreter, and myself. We had a very pleasant drive of fifteen miles or so over one of the splendid stone roads to a small village, where we turned off on to a dirt road as poor as the other was good. It was two or three miles back to the apiary. At one place the road was several feet below the level of the fields for quite a way. This, they said, was because the water which ran in the road, when it rained, had cut it down. The mud-holes which still remained attested the truth of the statement.

One of the insane-asylums of the city of Havana is out on this road, but I saw it only at a distance. The apiary is located across the tracks from a railroad station, in plain sight of the passengers. There is a water-tank here which looks like a huge iron cup with a flaring rim.

This station is Aguarda del Cura. I have seen many fine apiaries in the course of my rambles, but never one to equal this. There are 250 colonies, all in new ten-frame Dovetailed hives. These are arranged in four quadrangles, with the hives all facing in, or away from the broad paths from which they are worked. The space inside the quadrangles is set to bananas, while many noble old trees furnish the indispensable shade. There is also a row of bananas all the way around the apiary. The apiarist, Senor Prado, evidently has an eye for beauty as well as Senor Aguilera, for he had a garden at one side of the honey-house, in which are growing not only fine vegetables, but various ornamental plants, while a row of sunflowers added the suggestion of the North, which was needed to complete the picture. The hives are placed rather close together on timbers, about a foot above the ground. The hives are painted in about as many tints and shades of about as many colors as one can imagine. I did not ask how it happened, but it looked as though some color-blind painter had bought a job lot of small cans of paint, and then commenced on the first one he came to, and used it half up; then as fast as the can got low he poured in some from some other color. Or it may be it was done on purpose to help the bees find their way home. The general effect was rather pleasing, as it was set off by the deep red of the soil and the rich green of the tropical foliage.

Of course I asked questions, lots of them; in fact, I have a list which I fire at every bee-keeper I meet here.

The same old eight vs. ten-frame controversy holds good here as well as in the States, so my question as to why one size is used is sure to set up an argument. The bees in this apiary are on the average a pretty good lot of Italians. At one side of this apiary is a drinking-trough for the bees. It is a shallow trough, cut into a big block of porous stone, into which water drips from a barrel. What overflows from the trough soaks down the side of the block, and the bees seem to like to get it here better than on top.

The whole apiary is a garden. There was scarcely a spear of grass except where it was wanted. Senor A. says he expects soon to have a flag-pole on which will be a string of flags—the Cuban flag, the United States flag, the flag of the apiary, and a streamer with "The A. I. Root Co." on it. He raises considerable comb honey, so in the honey-house were stacks of Danzy sections and cases, fence separators, and all the rest of it. This house has a wide porch on two sides, a tile roof, a good hard-wood floor, and all of the kinks to delight the heart of the bee enthusiast, except the arrangements for extracting. Perhaps I am just a little cracked on the subject, but it looks to me like a waste of valuable energy to have the extractor set up on a platform four feet high, and then lift all the combs of honey up there. I prefer to lift the honey after it is extracted if it must be lifted at all. Then the capping arrangements were seven or eight feet from the extractor instead of "right handy."

It is almost impossible to get photographs of the apiaries here, if they are not in sheds, owing to the bananas, etc., which shut off the views.

In the case of this apiary, the day I was there was cloudy and windy — not very good for either snap-shots or time exposure. On the way back I noticed that the horse seemed to have a rather queer name; and after I began to notice it, it seemed some way familiar, so I asked Senor A. about it. It turned out to be "Coggshall," with a Spanish pronunciation. It surprised me very much to find a horse with such a name until Senor A. explained that the horse had grown into the habit of kicking the cover off from things, then all was clear; for I knew that GLEANINGS circulates in Cuba.

San Francisco de Paula, Cuba.

[Mr. Howe sent us a photo of the Aguilera apiary; but, owing to the difficulties mentioned in the letter above, the picture was not clear enough to be reproduced by half-tone. I regret this very much, as the view if clear enough would be very interesting, and we hereby request Mr. Aguilera to have another attempt made; and while he is about it, let us have a snap-shot of the horse "Coggshall" that has a fashion of "kicking covers off from things."—ED.]

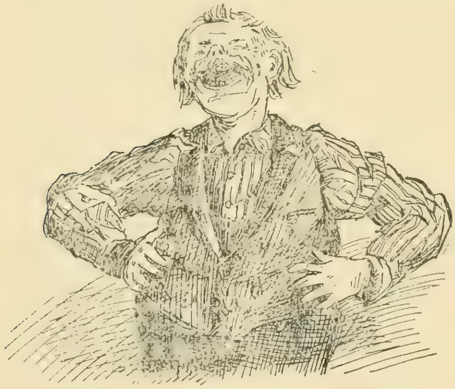
DISTRACTET HONEY.

BY LOUIS SCHERFF.

You ask if mine pees dis summer did vell?
Ef I got me considdible much new honey?
You bed your shlibbers. An' I dit sell
It all to dem cidy folk fur shpot gash money.
It was distractet honey, an' arful nice,
Because mine pees dey hat to gadder it dwice.

How dis habbend, I vill now to you exblain,
Alldough mine vife vould give a good deal money
Ef she coult rup out uf her life de arful stain
Dat she says I poot on her, dough t'vos very funny.
She has nefer forgif me quite to dis day,
Dough I haf dried to blease her in efry vay.

You see, las year from a pee subbly manafacter
I pought me some alsike I indendet to grow,
An' also vot dey calld a battend honey-distractor
Vot dey use to distract out de honey flow.
Vell, dis year I got a pooty fairly goot crop,
I distractet almost a parrel full to de top.



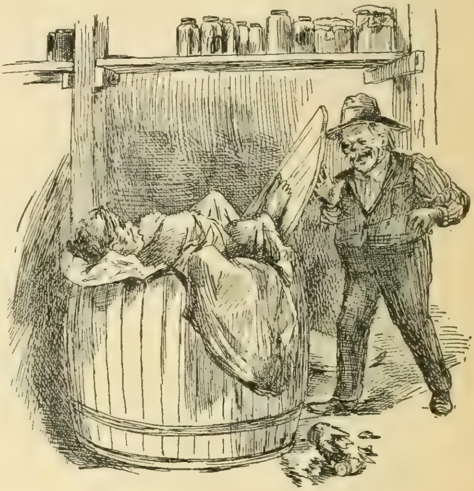
"SHE HAS NEFER FORGIF ME!"

De nex ding vos to fine a goot blase,
So I garried it indo mine upgrount cellar.
As mine vife vos avay for a cupple of days
I indendet, ven she got back, to dell her
If she vent in dare she shoult look a liddle out;
Dot de lit on dat parrel vas not fery shtout.

(You see, mine vife she is of pooty goot size;
An' for bossin' me roun' she's a reg'lar hummer.
Dot *she* vears de breeches, her neighbors surmise;
But *I* genrally vears 'em in de summer.
Her nature is goot, dough, ven she is not mat;
But ven somding goes wrong, den her demper is bat).

Out in dot cellar, high up near under de joice,
In a blace dot her burpose an fansy dit suit,
A shelf hat been pud dare by von of de boys,
Where she kept all of her nice cannedt fruit;
So high vos de shelf dat, unless you vould shtand
On somding, you couldn't reach back mit your handt.

Von hot day, vile gettin dinner herself,
To de cellar she shtarted, in her bare feet
To git a can o' fruit from de shelf,
Besides a few odder goot dings to eat.
An' just because she didn't haf no shair,
She clum up on to dot parrel vot shood dare.



"BESIDES, SHE WAS JAWIN'."

Dare came a crash, an' den she vent down
Into dot parrel, clean up to her hip,
Vile ofer it hung her skirt an' gown,
Yust in de right blase to catch all de drip.
Her hips vos wetched in dot parrel so tight
She couldn't turn'd her limbs roun, left nor right.

De schildren, addracted by de noise of dare maw,
Straitvay out in dot cellar now shtruck;
She dold em to run guick an get dare paw,
An dell 'em to hurry up, dot she vos shtuck.
Ven I got to de cellar an' saw dot sight
I lafft so hard dot mine eyes actuly crite.

You see, I didn't realize (dough it looket so funny)
Dot she vos in such an arful bad plight;
An' dot dare vos danger of her shpoilin' dot honey;
Besites, she vos jawin' me mit all her might,
An' sait dot I hat almost ruined her for lite,
Dot I cared more for pees dan I dit for my vife.

I dried to console her in farious vays
(At de same dime I blanned how to safe dot honey).
"If you'd a got drownd," I said, "durin' dog days,
How I'd hat been sad hat I lost mine sweet bonny."
But she almost shtarted a reg'lar quarrel
Mit me pefore I got her out of dot parrel.

Ven I dit git her out, I sat her in a vash-dup
(I coult handle her, for her outside gown vos glean).
Den mit a large sheet I coffered her up,
So dot nodding at all of her coult be seen;
An' I told her, if she would now only behafe,
Efry bit of dot honey I den coult safe.

We carried her outdoors, under de drees
(A neighbor helpt me to bring her out up).
Right in front of all dose hifes of pees
We blaced her, sittin' in dot vash-dup.
Den mit four poles an' four sheets I vent
An' inclos'd her around, like a circus tent.

I says, "Mardy, if you will now only tarry
A couble of hours I'll gif you half of der money
If you will let dose pees come in an' carry
Back to de hife off of you all dot honey.
Dell me, Mardy, vill you holt shtill?"
She lookt at me satly an' said, "I vill."

Dee pees soon fount dot honey, an' carried it home.
Dot dup an' tent vos mit 'em fairly a life.
It kept me fillin' de subers mit embty comb,
So fast dit dey carry it off of mine vife.
By half-bast dree dey hat her so glean,
Dot no pee or drop of honey on her vos seen.

Den I askt her to gif us some egsblanation
How it felt, an' if dose pees causet her bain.
She said, "It vos a very ticklish sensation."
But she wouldn't like to dry it ober again.
Efen som of de neighbors hat herd of her condition,
An' came to see de circus, an' askt for admission.

De honey in de parrel, ve tought, mite be soiled,
So ve brought it out too, to haf it vorket ofer.
Dot vay ve vould be sure it vouldn't git shpoiled.
Soon de pees vent for it vorse as for vite clofer,
But it dook 'em a bart yet of de nex' day
Before dey hat it alltogedder carried avay.

"EFEN SOME OF DER NEIGHBORS HAD HEARDT OF HER CONDITION."

It vos der most beautiful honey vot efer you seen
After I got true distractin' it for de second dime,
Such heltay color, an' so nice an' glean.
I put it all in glass jars an' markt it "Prime."
I sold it in town at almost double brice,
Because, 't vos der only honey pees gaddered dwice.

MORAL.

Dough abbarent de loss, dare is always some gain
If you just keep shtill an' use your brain.

ANSWERS TO SEASONABLE QUESTIONS

BY G. M. DOOLITTLE.

SIZE OF BROOD-CHAMBERS.

Question.—I am about beginning in bee-keeping, and wish to make my hives during these winter months when I have little else to do. Will you please tell us through the columns of GLEANINGS just what the size of the brood-chamber should be? I see by the different bee-papers which I have been enabled to read, through the courtesy of a friend, that there is a difference of opinion along this line.

Answer.—Yes, indeed, there is a difference of opinion regarding the size of brood-chambers—especially so when working for comb honey; and as I suppose the questioner desires to know something of the particulars in the matter I will explain how I arrived at the size of the brood-chamber which I have used successfully for nearly 30 years.

When I first began to keep bees the old bee-keepers about me kept them in hives containing from 2000 to 2500 cubic inches, so I started out with a hive which gave nearly 2600 cubic inches in the body of the hive, or about 2150 cubic inches inside the brood-frames, which were 12 in number, of the Gallup size of the Langstroth frame, the size of which was 11¼ ×11¼ outside measure. I soon found, however, that, as a rule, three of the 12 frames would be filled with nice white honey early in the season, and generally nearly all of these three frames of white nice honey would remain in the hives all during the next spring, often till the honey harvest arrived, very little if any of it being consumed, unless we chanced to have a poor season. After a little thought on the subject I concluded to place three blanks or division-boards in the place of three frames, two on one end of the hive and one on the other. To this end I nailed top-bars to frames on pieces of one-inch boards, which were cut so as to be ⅜ inch short at the bottom, and ⅛ at either side, and simply hung these on the rabbets the same as the frames always hung. I had previously found that my average queens would occupy only about 800 square inches of comb with brood, which left about 600 square inches of comb to be filled with honey and pollen, as my hive of about 2150 cubic inches gave me about 1400 square inches of comb, surface measure. Thus each year I was losing the use of from 20 to 30 lbs. of the choicest honey for the sake of insuring the bees with an abundance of honey should a poor season occur. This honey, when placed in sections, was worth not far from $5.00 at that time, while, if necessary to feed to secure sufficient stores during an occasional poor year, on account of a smaller brood-chamber, $2.00 worth of sugar, properly made into a syrup, would provide them the necessary feed to carry them through.

I tried about ten colonies with the three boards in place of the three combs, the first year, thinking it best not to go contrary to the veterans, on a large scale at first, fearing that they might be right after all. However, I was more than gratified to find that I had not only obtained the 25 pounds in the sections, but that these ten colonies averaged over 40 pounds more comb honey than those which had their usual 12 combs. I began casting about to know why this should be so, for I had no expectation that I should receive more in the boxes than what was naturally placed in the frames whose places were taken by the boards. The reason soon became obvious why this was so. As the queen kept the nine frames nearly filled with brood, when the honey harvest came, the bees had nowhere to put the honey which they gathered, except in the section boxes, so they immediately commenced work in them. With the 12 frames of comb they had more or less empty comb, which was already built, in which to store their honey; and as bees always store honey in any empty comb available about the brood-nest before they commence to build new comb, they were loath to enter the sections after a start at storing had been commenced in the empty comb below.

Another thing pleased me much, which was this: I found, as cold weather approached in the fall, that the bees placed their fall or dark honey in the brood-chamber, as the queen decreased laying preparatory for winter; and that, as a rule, the ten colonies had enough honey for winter and to carry them over till nectar was secreted the following spring; namely, 25 pounds; and as this was not so salable as the white honey, while it was just as good for the winter food for the bees, I had made a great gain here also.

The next year I placed boards in many more of my hives with like success, and the year after found me with all of my hives having only *nine* frames in them. Having fully established in my own mind the size of the brood-chamber (as nine Gallup frames) to my satisfaction, where working an apiary where swarms could be attended to, I found that, unless I used the boards and made hives expecting to so use them, I should not have room enough at the top for all of the surplus room necessary to use to the best advantage. This set me to thinking of side boxes in connection with top boxes, and I soon brought out the plan of side and top boxes combined, which I often gave to the public, as found in the back volumes of the different bee-papers. These hives gave me better results still than any before obtained, and with hives containing only nine Gallup frames I secured an average yield during 1877 of over 200 lbs. of comb honey from each old colony in the spring. But as these side and top box hives required considerably more attention than others, and did not prove so good at wintering as chaff hives, I soon brought out what is known as the "lateral plan" of working, in opposition to the "tiering-up" plan. This plan proved equally good with the top and side box plan, and had the advantage of requiring less manipulation and also of allowing the hives to remain chaff packed throughout the whole season, the chaff packing having its advantages in giving a more uniform temperature in the summer as well as in the winter. And thus I have kept on with the 9 Gallup frames during nearly 30 years; and upon looking up the matter lately, and comparing all of my yields in honey during the past 30 years as regards hives used, etc., and adding the whole together, and dividing by the 30 years, I find that the average yield during those 30 years has been very nearly 80 pounds of comb honey each year, covering the whole period, for each old colony in the spring, worked for comb honey. And I am still using only nine Gallup frames, except at the out-apiary, and in experimenting along the line of non-swarming, having found that, where non-swarming is to become at all perfect, a hive as large as the ten-frame Langstroth must be used. But as I am not far enough advanced toward perfection as yet on these non-swarming lines to give the matter to the public, I will not enter further into this subject at this time.

HEADS OF GRAIN FROM DIFFERENT FIELDS

THE REFORMED SPELLINGS; THE EDITORIAL BLUE PENCIL.

Dear Mr. Root:—Referring to mine of Nov. 10, and your reply as it appeared in GLEANINGS for Dec. 1, I court space in your next (or subsequent) issue; but I did not expect a verbatim account previously; you might have used the blue pencil on my 10th ult. letter to some advantage. You say that I am the seventh person who has objected to the reformed spelling. I extend my hearty congratulations to the minority who have the courage of their convictions, and who are opposed to tinkering with the English orthography. I wish GLEANINGS ten times its present circulation; but if its policy is to experiment with an outside issue, and one of such paramount importance, an increased subscription list will in my judgment be harder to secure under the so-called "reformed plan" than if you decide to adhere to the efficient manner in which it is now managed. Unfortunately, the majority of men who keep bees are men not endowed with an academic education; and to fasten upon this class of men some fad is an injustice to say the least. Let some of the periodicals dally along the distorted mud road of tinkered spelling; but there are thousands of persons who prefer the macadam road they were taught in *schools* to travel. Be consistent. I quote "Webster went as far as we propose going." "He eliminated *u* from *favour*, and adopted other *shorter spellings*." "The change proposed by us would hardly be noticed." If you say that Webster adopted *shorter spellings*, and you propose to journey that far, how in the world will it *not* be noticed? I quote, "Your position would leave no chance for progress." Well! if there is to be any progress in this direction, pray let it emanate from our public schools and colleges. "We should have regard for the rising generation." Every true-born American has; and if you regard his or her feelings, don't commence at the top of the ladder to teach such an intricate question. Answering your irrelevant remark about foreigners, I will say that my regard for them is extremely limited. Many of them who are dumped upon our shores are illiterate, and would not know a bee-journal from a bale of hay.

I think I made my letter of a personal nature, and you published it without my consent. I would not have "talked for publication," with so much apparent spleen. I make a most abject apology if I offended you, because some time ago I forwarded a communication about foul brood to you "for publication," and you did not publish same. I then accused you as not being "able to look over the borders of your Buckeye eyeglasses," and your dictated answer displayed evidence of a gentleman. A few words more.

You admonish your subscribers by declaring that there will be no need of a kick for not attending the primaries for delegates to be elected to the "tinkering convention." Wait and see. "A threat of this kind is," etc. No threat, my boy; simply an expression of a humble subscriber. Notwithstanding the one hundred who are willing for a change, I still adhere to the minority, and think that the sentiments of the practical bee-man are unalterably opposed to any modification of the English orthography. One of the strongest objections to the so-called reformed spelling is the obliteration thereby of many of the distinctive marks of derivation, many of which indicate at once the source whence we derive some of our modern English words.

GEORGE N. WANSER.

Rahway, N. J., Dec. 8.

[You did not offend me; and even if you did, your apology displays "evidence of a gentleman." But when I get a letter about something that has appeared in GLEANINGS, and nothing said about its being a private note, I take it that I can use it for publication.

Yes, I might have used the blue pencil, but when one differs from me I find if I don't let that one use his exact language that I am liable to be accused of cowardice. So I prefer to take my chastisements just as the writer pens them.

As to the real matter at issue, you are referred to an editorial in this issue which I think will make the antis more free to express themselves.—ED.]

TALL SECTIONS; ARGUMENTS FOR AND AGAINST THEM.

In these days of advancement in other things I am pleased to see that apiculture is not one whit behind the times. I think the Dovetailed hive is far ahead of the Simplicity, and the Hoffman frames equally superior to the old unspaced. There are many other changes equally for the better, but I think there is no doubt that many articles are brought to notice that are no improvement; and while some are advocating the tall section, I desire to speak a word in favor of the one in general use. Is it not a fact that the general tendency of the times is to have every thing prepared so it will sell regardless of what the consumer may get out of it? I do not say I am free from it; but ought we not to consider oftener how our customer will be benefited? If it is a fact that the tall section will sell better than the square one, is it not because the one who purchases it *thinks* he is getting more honey for his money? It is surely not in as good shape to place on the table, and there is where we all like to have it look well.

Now, if I change to the tall section, and it sells better, my brother bee-keeper will be compelled to do the same in order to compete, and after we have *all* made the change at an extra expense, what have we gained? Have we any reason to believe there will be any more honey consumed? The square section is just the right size to take the place of the L. frame in the upper story, which enables us to run for either extracted or comb honey, simply by putting in either section-holders or frames. This is a great advantage, I think, as I produce both kinds, and can supply a customer according to the size of his pocket-book.

J. T. VANPETTEN.

[This matter of preference for tall sections is not wholly one of a better price, for there are several other important considerations.

1. It is not the sections that look best on the *table*, but that which presents the best appearance in the *market*. A house with square windows and square doors would not look as well as one with tall ones. Tin fruit-cans, packages of starch, coffee, and all kinds of groceries, are taller than broad. Tall sections simply conform to the proportions of other articles offered for sale, and with which we are familiar.

2. A 4×5 section for approximately a pound weight permits of the use of a *thinner* comb—a comb more nearly approaching store combs in nature when bees are left to their own sweet wills. Thin combs are more liable to be better filled and sooner filled; and, what is of considerable importance, there will be fewer uncapped cells. Thin combs having shallow cells, it is argued, will permit of the honey being ripened sooner; and if this is true, it may account for the quicker and better filling of the combs.

3. R. C. Aikin, one of the brightest bee-keepers we have, lays down the rule that "*in comb-building the downward progress exceeds the sidewise in a proportion of about 3 to 2*," and then he adds, "If, then, comb-construction goes on in this way, a section that is as wide as deep will be finished down the center before it is at the outer edges. This will be made plain by looking at combs in all stages of progress." A tall section, then, more nearly conforms to the natural instincts of bees in comb-building than a square one.

4. A greater number of tall sections holding approximately a pound can be accommodated in a given super.

5. A tall section will stand shipping better than a square one, in proportion as it is taller. Take, for example, the 4×5 and the 4¼×4¼. The former can have 9½ inches of perpendicular attachment, and the latter 8 inches. Then the square comb has a wider comb to be held by those perpendicular edges.

There are other minor advantages, but these are the principal ones; but from what I have offered you can see that the rising popularity of the tall section is not due *wholly* to the commercial argument.—ED.]

A SEVERE TEST FOR EXTRA-THIN WEED FOUNDATION; TALL SECTIONS, AND DOES IT PAY TO CHANGE?

Let me state, for the benefit of *those* who are against tall sections, and who claim that foundation will not stay in them, that I filled 200 Danz. supers of 4×5 Danz. sections with full sheets of extra-thin Weed foundation, and fastened only at the top of the section, leaving ¼ inch space at bottom, and a small space at the sides of foundation. These I moved about 34 miles to bean-fields; and, it being an exceptionally cool year, only a small portion were filled. Over 100 supers of sections of foundation were moved back, making about 68 miles hauling, and handled 4 times in loading and unloading, and not a dozen sheets of foundation fell out, and *these* were not properly fastened into sections, or there would not have been any to fall out. Now, then, this extra-thin foundation is bound to swing from side to side in moving with a wagon over a few miles of the way on very rough roads, and yet they were in as good condition as when they left the apiary, excepting these few sheets that came entirely loose and whole from the wood. This is surely a good test.

It is a mistake to work against this improvement. Experience with the unprejudiced will prove them good.

It rained in the northern part of the State on the 22d, and may reach us in a few days; but they have considerably more rain in the north than down here. Near the coast the country has a beautiful shade of green, and is gradually becoming so away from the coast.

M. H. MENDLESON.

Ventura, Cal., Dec. 25, 1899.

[M. H. Mendleson is, perhaps, the most extensive bee-keeper in California, and perhaps in all the West. He is a strong advocate of extra-thin foundation and tall 4×5 sections. Mr. Mendleson is also the man who hauls *whole apiaries* in a single load over the mountains in California, and who does things on a big scale; and this reminds me of a statement recently made by the editor of the *Review*, that he who would make a specialty of bee-keeping, and make that almost his exclusive business, should manage bees on a large scale.—ED.]

DOES THE QUEEN MEET THE DRONE THE SECOND TIME?

On page 882 Prof. C. F. Hodge states, in relation to the nuptial flight of a queen, that within 15 minutes after the bees had removed the organs of the drone she flew again, and in five minutes returned with a second trophy of success. Now, as I always have supposed that a queen flew but once for the purpose of mating, this is news to me, and no doubt will be to a number of beginners. Will you please give us your views on the subject?

JOHN F. HENNESSY.

Ballston Spa, N. Y., Dec. 11.

[I noticed the passage to which you refer in Prof. Hodge's article, and intended to call particular attention to it; but I see I overlooked it. The language is susceptible of two or three interpretations. One is, that Prof. Hodge believes that queens may meet the drone more than once—before and *after* egg-laying; second, that they may be fertilized two or more times *before* actual egg-laying begins, but not after; or, third, what is more probably true, the bees, on the return of the young queen, in their efforts to remove the *outside* appendages, took out all the organs of the drone, thus making the first flight of the queen fruitless, rendering a second one necessary. I have seen virgin queens go around with the appendages more or less shriveled up in the form of little strings, for a day or two; but the bees always chase after, and probably do in time succeed in pulling them away.

It is generally laid down in the text-books, and the statement seems to be supported by facts, that a queen meets a drone but once in her lifetime; and although there has been some evidence that seemed to indicate that queens might meet a drone a second time, all such reports have been discredited. Perhaps Prof. Hodge, now that the question is opened up, will be enabled to enlighten us a little further on these points.

An observatory hive is worth all the books that have ever been published on the subject; but the only trouble is, it takes more watching than most people are willing to give.

A strong fact against the theory that the queen meets the drone a second time is that there has been no absolute proof to the effect that the progeny of any one queen changes from black to Italian or *vice versa*. The first bees hatched by the queen will be like all the rest reared from that mother, no matter whether she lives to be three months old or three years. It is true, there have been reports that the progeny of one queen changed all their markings, but so far as I can remember there have been too many chances for error on the part of the observer.—ED.]

MATING OF QUEEN AND DRONE, AS SEEN BY ANOTHER EYE-WITNESS.

Having just read what you say on page 97 of your A B C book about the mating of queens in the air, including the communications of Messrs. E. A. Pratt and S. R. Fletcher, I am prompted to report the following: In the spring and summer of 1884 I had an apiary near Wayland, Stephens Co., Texas, on the top of one of those precipitous elevations that are there called mountains, and to this apiary I gave daily personal attention. During the swarming season there might be two or even three swarms in the air at once. This kept me much of the time on the lookout. One day while standing on the outer edge of the apiary I heard a buzzing noise overhead, and, looking up, I saw a queen and a drone that had evidently just embraced and then separated, and were now circling in the air, each in its own way, but connected with each other by a long white filament that was being drawn out longer and longer till it was not several feet only, but several yards, in length. When this gossamer-like thread became too attenuated to stand the strain it parted, and I lost sight of both the queen and drone while they were still up in the air. I did not consider the matter worth reporting, not knowing then that such observations have rarely occurred, or at least have rarely been published; hence this report is like one born out of due time, but so the apostle Paul said he was.

R. A. COLE, M. D.

Jackson, Ind. Ter., Nov. 10.

THE CUBAN BEE-KEEPERS' ASSOCIATION.

For a long time there had been talk of the need of a bee-association in Cuba. This finally took the form of a call for the bee-keepers of Cuba to meet at the office of Dr. James Warner, in Havana, for the purpose of forming a society of bee-keepers. At the appointed time the meeting was called to order, and a constitution adopted. The officers elected were: President, Dr. James Warner; Vice-pres., Senor Pedro Casanova; Secretary, Harry Howe; Treasurer, Senor Juan Ranelo.

The president then gave a list of persons proposed for honorary membership. It was unanimously adopted. They are: Frank Benton, O. O. Poppleton, E. R. Root, W. Z. Hutchinson, H. E. Hill, G. W. York.

The secretary read the proposed foul-brood law, and a resolution was adopted asking for its passage.

Sec. IX. is of interest especially. It reads, "The inspector of apiaries shall examine all bees imported into Cuba; and any bees or apiarian appliances found to be contaminated with foul brood shall be immediately destroyed, without compensation to the owner. The inspector of customs shall notify the inspector of apiaries of all shipments of bees received."

This paragraph gave rise to considerable discussion, but seems to cover the ground as well as can be expected.

The purpose of the association, as stated in its constitution, is to advance the interests of Cuban bee-keepers, and that at present means fighting foul brood. HARRY HOWE.

HOW TO DRY OUT SQUARE CANS; BEER-BOTTLES FOR HONEY.

I have a plan for drying honey-cans, that I have never seen in print; and as it is very effective, it may be of value to some one who has not thought of it. After washing the can, I turn it down in such a way as to cause all of the water to drain down in the corner by the mouth of the can, and after sufficient time has elapsed for the water to drain down in the corner, put a small sponge in and press it down with the fingers. It will absorb the water, when it can be pulled out, squeezed, and used again. I have sometimes used a small rag, but the sponge is better. If properly done, there will not be enough water left in the can to make it rust.

In putting up honey (extracted) to be sold by the grocer I find second-hand beer-bottles to be the cheapest and most convenient package I can get, the cost being about 20 cents per dozen. There is an old darkey in this town who makes a business of collecting old bottles. With a little wagon and an old mule he goes about crying, "Old bottles and flas'es!" He gives the little children, from whom he gets nearly all his bottles, a stick of candy or a teacake for each bottle, and I take his beer-bottles at 20 cents per dozen. J. M. CUTTS.

Montgomery, Ala., Nov. 13.

WET-SHEET PACK FOR A SEVERE BEE-STING, AND HOW IT WORKS.

I want to say a word of comfort to those who suffer from severe itching, resembling hives, all over after being stung by bees, especially in warm weather. My daughter, aged 12, was stung by a bee last summer, and in half an hour her body was as red as it could be, and swelled up in blotches and lumps of all sizes, and she was in such agony that she cried out aloud. My wife got a sheet, wrung it out of cold water fresh from the well, and spread it upon a bed, and, after taking off all of the child's clothes, she laid her upon it and covered the ends of the sheet over her and patted them down very closely. She then covered her up with a lot of quilts. In fifteen minutes she was asleep, and slept over an hour. When she awoke she felt quite well, and the perspiration was flowing freely. After wiping herself carefully with a soft towel, she dressed, and felt as well as ever. EDW. SMITH.

Carpenter, Ill.

GETTING BASSWOOD SEEDS TO GERMINATE.

I have had some practice in nursery work, and have been very successful in germinating seeds that many have failed in. The most difficult, I think, I have found, have been the "canna," or, as often called, "Indian shot-plant," and well named, because the seed is as hard as a shot. The treatment with which I have had the most success has been by taking the seed and putting a lot in a tea-cup or bowl, and pouring over them scalding water. The water must be exceedingly hot. Let them be until the water is cool, and repeat the operation several times. I have found instances when I would have to do it for a full day. After they have been scalded several times I take the seeds out in my hand, and look very closely at the outer shell of the seed, and find a ragged tear, or crack, in the outside covering of it. Those that crack in this way I plant, and in a few weeks I have them growing.

As basswood seed is hard, and of a like nature, I do not see but that, were it treated in this manner, it ought to germinate in a month or so in the house, in winter, or outside in the spring. F. L. REHN.

Collingdale, Pa.

A GOOD REPORT.

While reading of the unfavorable reports as to the honey crop from the east, west, north, and south, I have no cause of complaint to report from my little pleasure-ground of 55 stocks. During the season I extracted 8884 lbs., besides, at a rough estimate, 1500 lbs. surplus in hives, for new swarms next spring. Average net price realized, 5⅜ cts. per lb., cans, freight, etc., deducted. While I keep bees more for recreation than for profit, still I usually succeed in combining the two. My best season in California was 1892. From 54 colonies, spring count, I extracted 22,397 lbs.; increase to 72. Clear profit besides increase, $786. My disastrous year was when I extracted 840 lbs., and had my apiary decrease from 145 good colonies to 54 poor ones.

D. E. STRATTON, M. D.

Chinese Camp, Cal., Dec. 6.

[This it should be said in all fairness is much better than the average bee-keeper is able to do. But it shows what good management in a good location can do.—ED.]

THE DIVISION-BOARD FEEDER.

On page 895 you describe the Doolittle division-board feeder. I would kindly ask you to answer the following questions:

1. Does not a large quantity of syrup get lost by soaking into the wood the feeder is made of?

2. Do not a lot of bees get drowned? I suppose the bees have direct access to the syrup through the opening left under the top-bar; but is there no need of an arrangement to prevent the bees from getting drowned? If so, what kind of arrangement do you use? I am sure if I would use this feeder as mentioned in your paper it would soon be filled with dead bees.

L. MARNO.

Escondido, Cal., Dec. 7.

[1. Syrup does not soak into the wood of the feeder, for the reason that, after the feeder is finished, it is coated on the inside with paraffine.

2. We have had no trouble on that score so far. The sides of the feeder inside are only 1¼ inches apart; and if a bee gets down into the syrup it has no difficulty in reaching either one side or the other in crawling out; and the minute it is out of the syrup other bees will proceed to lick it off as they did that Dutchman's wife, referred to on another page.

Just try the feeder and be convinced yourself. But suppose bees did get drowned; it would be possible to put in a small float. A strip of wood ¼ inch thick and ⅞ wide and 6 or 7 long could be used on each side of the central partition.—ED.]

ARE BEES INFLUENCED BY HABIT?

Are bees influenced by habit in regard to their habitations? I find that swarms from bee-gums do not seem to take kindly to improved hives, and have had a case of a transferred colony with brood and honey to swarm two days in succession at mid-day, going back of their own accord at about 3 o'clock. I hive new swarms on full sheets of foundation, and have to confine them 48 hours, but still have had them depart for the woods.

ROBT. L. LUACES.

Puerto Principe, Cuba.

[It is possible that bees do object a little to the smell of fresh pine and paint of a new hive; but really I believe that the hive has nothing to do with their determination to swarm. A swarm once in a while gets crazy. I have hived such two or three times the same day. The only thing to do is to catch the queen and cage her. The bees may come out but will come back in a short time if they do not happen to unite with some other swarm in the air. It is not good policy, ordinarily, to hive a swarm in an empty hive on empty frames. For the first 24 hours the bees should have not only foundation but a frame of old comb or unsealed larvæ with honey in it; then, if they act "cantankerous," shut them in the hive over night until they get over their frenzy or misbehavior.

Referring more directly to your question, I believe such crazy swarms would behave about as badly with an old straw skep as they would with a newly painted hive. Their insane desire to swarm out would probably be satisfied for the time being only by a good long flight to the woods; but by shutting such bees up in a hive as you explain, being sure they have plenty of ventilation, they will begin to quiet down; but when a swarm comes out for the second time, I spray them with a spray-pump, either in the air or after they have clustered. A good artificial rain among the bees will induce them to cluster; and, when once clustered, fasten them in the hive and wet them down.—ED.]

THE DOVETAILED HIVE.

Mr. Editor:—The Dovetailed hive has now become the standard of excellence and the pride of many or nearly all bee-keepers—I mean the AD5 or hive-body from super down; but when the super is put on, that pride is wounded by a small defect that gives much trouble. That little flat tin that supports the section-holders is too *frail*. It gives down, and the section-holders get stuck fast to top-bars of the brood-frames; and when the super is pried up, and the brood-frames with it, the bees get mad, and possibly the bee-keeper and the A. I. R. Co. get a blessing. We are now putting lugs on the end-blocks of all our section-holders at top, and hang them in the rabbet, and discard the tin; the thick end-blocks are best, as they fill the super, and nail up stronger. The top-bar of the shallow extracting-frame is also too *frail*, as it sags down and gets stuck fast; and the comb gets broken, and honey runs when the super is pried up. Now these are *very small* defects; but when remedied the hive will be our *pride* with the *super also on*.

W. B. RANSON.

New River, Va., Dec. 18.

[The same complaint has been entered before; and in view of that we have made the strips of tin heavier, so that we do not believe there will be any trouble in the future.—ED.]

THE DIVISION-BOARD FEEDER.

How and where do the bees take the foundation from the Doolittle division feeder? It is not plain to my mind. If the bees go in at the top, it seems to me the feeder would soon be full of dead bees.

BEGINNER.

Lincoln, Ill., Dec. 12.

[The bees get the feed by crawling in at the space between the top-bar and the top edge of the sides of the feeder. No danger about dead bees.—ED.]

PAINTING HIVES WHILE BEES ARE IN THEM.

Will it injure or kill bees to paint the hives after the bees are in them? What kind of paint is best to use?

L. O. BULLOCK.

San Antonio, Tex., Dec. 11.

[We make it a regular practice to paint our hives once every two years when the bees are in them, and we never noticed any bad results—how could there be? When the alighting-board is painted it may be necessary to protect it from the bees until it dries, by means of another thin board laid over it.—ED.]

EDITORIAL
BY
E. R. ROOT

QUITE to my surprise, and certainly to that of the bee-keepers of York State, I managed to attend their State convention.

IN our next issue we shall have a continuation of the report of the Denver convention, a report of the Michigan meeting that took place at Thompsonville, Jan. 1 and 2, and also one of the New York State convention at Geneva. GLEANINGS does not attempt to go into a full report of conventions generally, but makes an effort to present as far as possible the cream of the discussions — if not of all conventions, some of the most important.

AT the Michigan State Bee-keepers' Association, held in Thompsonville, Jan. 1 and 2, Mr. J. M. Rankin, who has charge of the apiarian department of the Michigan Experiment Station, reported some interesting experiments in the line of developing bees with long tongues. He found that the average length of the tongue of black bees is 4.5 millimeters; Italians 5.1, while he had several colonies of a strain of bees at the Experiment Station apiary whose tongues measured 6.2 millimeters. He believed that, by a process of selection, and breeding with this trait in veiw, a race of bees might be developed which will secure more of the honey from clover-blossoms.—J. T. C.

300 CARLOADS OF HONEY FROM ONE STATE ALONE.

RAMBLER, in this issue, says that California, in a good season, has shipped out as many as 300 carloads. At an average weight of 30,000 lbs. per car, this would mean 9,000,000 lbs., or 4500 tons; and this does not take account of the large amount consumed annually within the borders of the State; but, as Mr. Martin very guardedly says, this is the possible amount in a good year—not an average.

Colorado, I believe, shipped out of its own borders last year 50 carloads, or 1,500,000 lbs. But the Coloradoans are great consumers of honey, and they have rather made an effort to keep the honey *within* the State rather than send it out.

RAMBLER'S ARTICLE IN THIS ISSUE.

THE article in this issue by Rambler is the last one of the present series. Just at present he is engaged in honey production, and will not be able to get out on his regular rambles over the country. He is too versatile a writer to keep his light under a bushel, however, and so we are negotiating with him for another series of articles on a somewhat different line; and in the near future we shall hope to give something more from his pen.

But referring again to his article in this number, I believe it is no exaggeration to say that this is the best short article on California we have ever had. Mr. Martin goes over the subject so carefully that we have decided, as stated on p. 45, to put it in pamphlet form.

THE REFORMED SPELLING; AGREEING OR DISAGREEING WITH THE EDITOR.

WE are getting now a few more negative votes, although the preponderance of expressions seems to be decidedly for the shorter spelling. But I am coming to the opinion that those who are opposed to the change hesitate to record their opposition for fear we shall not be pleased. If there is any such a one among our subscribers I hope he will be free to send in his vote at once. Alack the day when our subscribers or correspondents shall feel constrained to keep still when they differ from the editor, and only speak out in meeting when they agree with him! It is much pleasanter, I know, to agree with a person or with an editor than to take up the cudgel and fight him, because, forsooth, the editor is supposed to have more space at his command, and he can choke the other fellow off whenever he pleases, or at least that seems to be the popular impression. It would be a sorry day for GLEANINGS if that condition of things should ever control its management.

We have not yet adopted the shorter spelling, because we are still waiting for a further and freer expression; and for fear that there are many who do not favor the change, I am going to ask that each opposer of the reform send in a postal card expressing his opinion, even if he puts on no more than "Reformed Spelling, No." Now, if we should adopt the new spelling after an invitation of this kind, and it is not accepted, you must not blame us, for now is the time to exert your influence.

But it does beat all, as Samantha Allen says, what wrong notions people do get. We never thought of adopting the spelling of Josh Billings, nor did we propose going as far as the *American Bee Journal*, nor had we proposed shortening more than *one class of words*—those that have the superfluous letters *ugh* like *though* and *although*. By the new form of spelling, if GLEANINGS adopted it, you would see *thot*, *bot*, *tho*, *altho*, *thoroly*, and possibly half a dozen other words. But as to spelling the word "through" *thru*, and also the word *thruout*, that does seem a little like the phonetics of Josh — too much so. We are trying it in our typewritten letters, just to see how it feels.

Remember, we are still *on the fence*, awaiting the pleasure of our subscribers.

Later.—Since writing the foregoing we have received a large number of negative votes, and at this rate the antis will vote down the proposed change. If so, it will be all right so far as we are concerned, as it will save us considerable inconvenience and more or less confusion between the spelling in GLEANINGS and that in our other publications. This is what one writer says, and there is a great deal of truth in it:

> Responding to your call for votes on the "spelling reform," I vote no. If you could have all your subscribers before you, and ask for a show of hands, I

believe you would be safe in assuming that nine-tenths of those who do not speak out by letter would vote *nay* if simply show of hands would suffice.

Bee-keepers are a pretty busy lot, and, besides, most of us are not experts with the pen, and very much dislike to write, and will suffer a good deal without being drawn out, thinking and hoping such a fad will fall of its own weight. At the same time, those who favor a change of any kind are quite apt to voice that desire. I expect to be a subscriber to GLEANINGS as long as I live, and should like to have it please the eye as well as some of the other senses. A. CHRISTIE.

Smithland, Iowa.

THE NEW DISEASE IN NEW YORK NOT FOUL BROOD.

HAVING just returned from the York State convention held at Geneva on the 10th, I find that a little space is still left in the first form that is now going to press. I can not go into details, but I will state that an interesting and profitable convention was held, the most of which was taken up with a discussion relating to the new bee malady or disease that seems to be raging in the eastern portions of the State. From all the evidence presented, I feel sure in my own mind, at least, that it is not foul brood, because it differs in quite a number of important symptoms. Prof. Benton, from the Department of Agriculture, Washington, D. C., stated that so far the examinations with the microscope had *not* shown the *Bacillus alvei* in the diseased matter that had been sent to the Department from the affected districts. The preliminary examinations of Bacteriologist Howard, of Fort Worth, Texas, seem to be to the same effect. It appears, however, whatever it is, that it is very contagious as well as destructive.

I make haste to bring this before the bee-keepers of New York, because it is important to have at least a reasonable assurance that it is *not* foul brood, even if we do not know what else it may be.

Both foul-brood inspectors West and Stevens were present; and, after a very thorough discussion, ways and means were devised by which the ravages of the malady may be held in check, it is hoped. The fact that the Department of Agriculture, Washington, is interested, and that the Commissioner of Agriculture of New York is also in hearty sympathy and co-operation, would seem to indicate that, so far as the higher powers are concerned, all will be done that can be.

ANNUAL REPORT OF THE U. S. B. K. A.

GENERAL MANAGER SECOR sent out his report some time in December; but by some oversight I omitted to refer to it before. It recites the work done against alleged honey-adulterators in Chicago, a full account of which was given in our issue for Sept. 1, page 652. While the first suit resulted in acquittal for the defendant, the results have been most salutary. A great deal was said about it in the Chicago papers, and indications seem to show that the old flagrant adulterators will be more careful in the future, because they seem to realize that the Association will not drop the matter at this point.

At the annual meeting of the Association held at Philadelphia last September, there was submitted a new constitution, to be voted on by both societies, with the view of uniting the two if the members of both organizations should so vote. This new form was submitted to the members, with the probable result that amalgamation will now be accomplished in fact.

There are 400 members, and the financial statement shows a balance in the treasury of $131.22.

The United States Bee-keepers' Association, or what will probably be called the "National," hereafter, should receive the hearty support of every bee-keeper interested in the enforcement of laws against adulterated honey.

HONEY-EMPTYING MACHINES; THE EXTRACTORS OF EARLY DAYS; J. L. PEABODY; THE EVOLUTION OF THE HONEY-EXTRACTOR.

AT the close of one of the sessions of the Colorado State convention, an elderly gentleman with a very pleasant face stepped forward and introduced himself as Peabody, adding that he had known my father for many years. On shaking hands with him I kept saying "Peabody" to myself several times, wondering why the name was familiar. "Peabody?" said I. "Why, as a mere boy I used to hear of a man by that name who invented the honey-extractor, the first machine that was ever put on the market in the United States."

J. L. PEABODY, THE MAN WHO FIRST ADVERTISED HONEY-EXTRACTORS IN THIS COUNTRY.

"I believe I am the man," said he; and then as it dawned upon me that I was addressing one of the old veterans of the 60's and 70's in the days when Langstroth, Wagner, Gallup, Adair, Quinby, Tupper, King, and others, were the leading lights, I felt as if I wanted to take off my hat, and I did, before the man who stood before me. "Indeed!" said I, grasping his hand again, for another shake; "and so this is Mr. Peabody, the extractor man, is it?"

He modestly assented, and then, changing the subject, said it would give him pleasure to have me take dinner with him, for he lived only a short distance from the capitol building where the convention was being held.

At the table that day we talked over not only men and things of the apicultural world, but our thoughts drifted toward the church, Sunday-school, and temperance. Both Mrs. Peabody and her sister are ardent workers in the church and Sunday-school, and it is real inspiration and pleasure to meet them.

No wonder the name "Peabody" sounded familiar to me. There is Henry W. Peabody, the great exporter, of New York, a cousin of J. L.; H. O. Peabody,* the inventor of the Peabody rifle, a brother of the one whose picture we present; and then there was George Peabody, the great London philanthropist, who gave 18 millions of dollars to improve the residences of the poor in London. J. L. Peabody, the one whose picture is here given, like the women of his household, is also interested in church work. While he has, perhaps, retired from active business, he seems to take an active interest in all lines of Christian work.

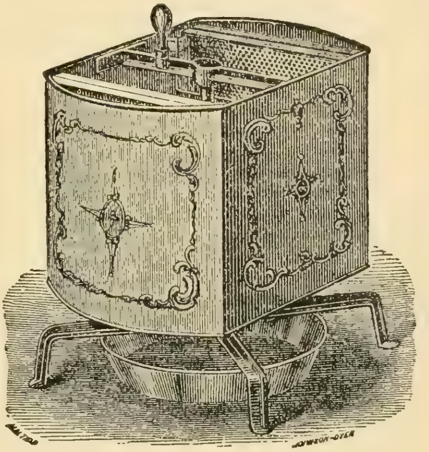
J. L. Peabody, the bee-keeper of years ago, brought out his extractor in 1870, it having been patented in 1869. I believe this was the first American honey-extractor, and perhaps the first in the world, that was ever put on the market. At that time it was styled a "honey-emptying machine." Prior to the advent of this extractor Langstroth and son built a machine in 1867, somewhat like the one invented by Hruschka himself, the Austrian who invented the honey-extractor. Soon after this, A. I. Root built the first *all-metal* machine, and I think he was the first one to use a gearing by which one turn of the crank would revolve the comb-basket two or three times; but it was not advertised until some time after Mr. Peabody placed his on the market.

The Peabody was a beautiful little machine, and so neatly gotten up that A. I. R. immediately concluded that his own extractor was out of the race.

Whatever of neatness and mechanical excellence the Peabody possessed, J. L. says was due to his brother H. O., the mechanic who designed and built it. A man who could invent a rifle that was the sensation of army circles 20 years ago, could, as a matter of course, design a honey-extractor that was well nigh perfection for that time.

Unlike the extractors that had been built previously, and unlike those of the present day, the whole can revolved. No gearing was used, because Mr. Peabody supposed that a can of large diameter would not require such gearing, and accordingly none was made.

Well do I remember when this extractor was received, and it is one of the first things that I do remember in my earliest experience with things pertaining to bees. The beautiful lettering and the neat japan work of the original Peabody leave a distinct impression on my mind now; and, looking back at the old advertisements, I find that it was offered at the low price of $15, including two honey-knives. This, for that day, was cheap.



THE FIRST HONEY-EXTRACTOR EVER SOLD IN THIS COUNTRY.

Soon after, another machine, made on the same principle, was gotten out by Gray & Winder; and in looking over the old volumes of the *American Bee Journal* I find it was advertised right alongside of the Peabody. While the can of the Gray machine revolved, it was geared, and to this extent it was an improvement, but it was not so neat in general construction, nor as good, as I remember.

About this time, also, another rival honey-emptying machine was put out called the Murphy; and this went one step further, by making the can stationary, or back to the original principle of Hruschka.

In 1873 A. I. Root started the publication of this journal, then only a quarterly; and very soon after that he began to advertise the Novice honey-extractor — a machine which, in its improved form, is still on the market.

A PROPHECY OF THE FUTURE OF THE EXTRACTOR.

In looking over an old Peabody catalog, issued in 1870, I find a prophecy (or what I shall take to be such) from W. F. Clarke, which reads:

> Now in these balmy days of honey-slinging,
> The bees are kept without cessation bringing
> New stores of sweets; which quickly we transfer
> Into the MEL-EXTRACTING CYLINDER,
> And thence, by means of force centrifugal,
> Get honey by the pail or barrel full.—*Clarke.*

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* Another rifle invented by the same man, called the "Peabody-Martini," was at one time the standard arm of Great Britain; and it was the same weapon that was used with such terrible execution by the Turks against the Russians. This I get from an old army paper called the *Army and Navy*, of Saturday, April 10, 1880, a leaf of which was placed in my hands by J. L. Peabody.

EXTRACTED HONEY AT 33⅓ CTS.

On the third page of the same catalog I extract the following from the pen of E. Gallup, who had just been expatiating on the value of the honey-extractor:

> I have sold all my extracted honey in cans, at three pounds to the dollar, and by the pailful at 25 cents per pound, and box honey at 25 to 30 cents, the canned honey going the faster.

Extracted *three pounds for a dollar!* and comb honey up to *30 cents!* This was in 1871. This same E. Gallup is now writing a series of articles for the *American Bee Journal*, and if he will tell us how we can get these same prices *now*, we will emblazon his name in the temple of fame and write him down as a greater than even Hruschka, the inventor of the machine for producing the kind of honey that he tells us brought 33⅓ cents.

RIGHT AND WRONG PRINCIPLES IN EXTRACTION.

In the years that have gone by since extractors were first sold in this country it has been clearly demonstrated that it is a mistake to construct machines with *revolving cans* or *without* gearing; and so, for the last 20 years, at least, extractors have been built with *stationary* cans, inside of which the comb-pockets, reversible or non-reversible, revolve, motion being imparted by gearing so that one turn of the crank-handle makes two or three turns of the baskets.

It is only within the last six or seven years that reversible extractors were put upon the market, notwithstanding the fact that Thos. Wm. Cowan, editor of the *British Bee Journal*, introduced in 1875, and put into use what we now call the Cowan extractor. It was nearly 20 years before this extractor was advertised and sold to any extent, at least in this country; and the fact that the reversing feature was adopted after this lapse of time is a pretty good evidence that it was good. Indeed, after looking over all the different plans of reversible machines, the Root Company adopted this as the simplest and most efficient.

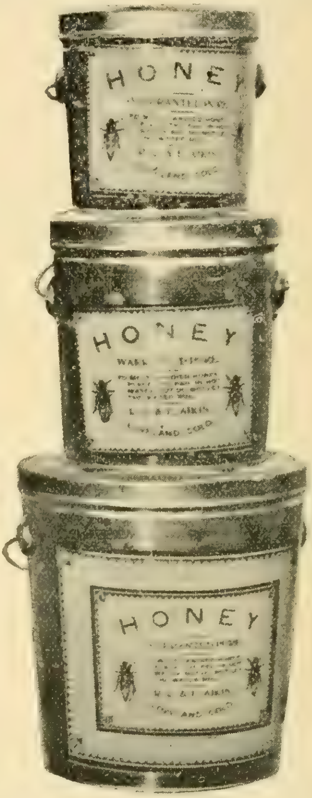
THE COLORADO STATE BEE-KEEPERS' CONVENTION.—CONTINUED FROM LAST ISSUE.

At the evening session of the first day, President Aikin discussed his method of marketing his honey crop.

HOW AIKIN CREATES A HOME MARKET; RETAILING HONEY IN THE CANDIED FORM.

When he first began selling his product he looked up the markets at Chicago and other cities, and found that, after freight, drayage, and commission had been deducted, there would be but very little left for him. He then concluded that, if he could sell his honey as cheaply, or nearly so, as sugar and other standard sweets, consumers would buy it in preference, and he would make a better profit than to send to the city, and *be sure of his money*. Accordingly, he has for several years been selling his crop around home, and sending little or none to the city markets. He put the price low, and retailed it out in large and small lots, with the result that he had been able for several years to sell his honey almost at his door, and get for it, in return, cash from neighbors and friends, rather than wait six months or longer on commission men of doubtful reputation.

He exhibited his pails of honey—honey candied solid. These packages were nothing more nor less than small lard-pails, with sloping sides, so that they would nest. They bore a very neat lithograph design on the outside. By first purchasing the stone (something that is analogous to an electrotype for ordinary printing), the makers of the pails lithographed all his stock at a slight additional cost.



It is characteristic of Colorado honey that it candies very quickly. These pails are filled by Aikin shortly after the extracting or before granulation; and after the honey stands awhile it candies solid. A very brief statement in the lithograph design explains how the honey may be reliquefied after placing it in a pan of hot water.

These lard-cans have the advantage of cheapness, being almost the cheapest article that can be bought. Self-sealing is rendered unnecessary, because the honey candies so quickly it will soon be as solid as so much lard, and hence may be shipped safely to almost any point.

Mr. Aikin's favorite method of packing for shipment was to put these pails into common cheap cracker-barrels, pack straw between them, head the barrels up, and, presto! they are ready for any kind of rough handling, and for almost any distance by rail.

It developed in the discussion that very many were fond of candied honey; and Mr. Aikin had no doubt been responsible for educating consumers in his locality to the palatability of honey in that form.

THE ECCENTRICITIES OF CANDIED HONEY.

Following this little talk of Mr. Aikin on developing the home market, there was a discussion on the subject of candied honey. Mr. W. L. Porter, a resident of Denver, one of the most extensive bee-keepers in Colorado, said that his honey, after candying solid, would sometimes return to a semi-liquid form. Indeed, quite a number reported that their honey behaved in this manner. Both Mr. Aikin and Mr. Porter, as well as some others, reported that, out of several cans filled out of the *same lot of honey*, and *at the same time*, some would candy solid and others remain liquid. Mr. Aikin reported that he had some honey that was exhibited at the World's Fair. It candied solid, and was now apparently going back to the liquid condition. From year to year it seemed to change in its general character, and the granules to assume a different color.

After the convention Mr. Aikin showed me some of this honey. It looked like any old candied honey; but it was interesting to see how different it looked from that which had been candied for only a few months.

As we learned later in the convention from Dr. Hedden, of the Colorado Agricultural College, of Fort Collins, there is only a certain portion of honey that really candies or assumes the granular form. Honey is made up of two elements besides water—levulose and dextrose. The latter candies, and the former remains a liquid. When one looks at a jar or pail of candied honey it seems almost impossible to believe that every particle of it has not candied. But the professor explained that, if the mass were subjected to a heavy pressure, the liquid portion (the levulose and water) would be squeezed out.

OVERSTOCKING IN COLORADO.

On Tuesday morning, the second day of the convention, the subject of overstocking a locality was assigned by the program committee to J. E. Lyon, of Longmont, a bee-keeper who owns and takes care of something like 500 colonies 30 miles from Denver. Longmont is a good locality for bees, and there are close on to 2000 colonies within five miles of Mr. Lyon's home, and, naturally enough, it was supposed that Mr. Lyon would have some grievance to present; but he had nothing of the kind. He went on to explain that a given area in some portions of Colorado would support many more colonies than an equal area in the East; but, notwithstanding, he believed there was a good deal of overstocking in Colorado. Apiaries would increase in size and increase in number; and he and his friends had noticed that the average annual yield decreased somewhat in proportion to the increase in the number of colonies in his immediate vicinity. Some winter bees died off very badly because Colorado winters are exceptionally hard on bees, and last winter was one of them. The many warm days they had in winter drew the bees out, causing the clusters to expand and make general preparations for brood-rearing. A sudden drop in temperature caused many bees to die. The result of this was, that the question of overstocking was, to a certain extent, taking care of itself, because the large increase was pulled down largely by winter losses; but he could see a slight increase in the number of bees, in spite of such losses, and that consequently there was a slight decrease in the amount of honey per colony. Some localities for an apiary might support 50 colonies, and make a nice little profit for their owner, when, if he were to place in that spot 150, they would starve; yet some localities he knew would support for a single apiary 300 colonies. For example, Mr. D. Moon, of Golden, Colo., had 330 in one place, but he said there were immense quantities of sweet clover and alfalfa there. Where there is nothing but alfalfa to depend on, so large a number in one apiary would prove too many. Mr. Lyon believed emphatically in the principle of the largest amount of returns for the least amount of labor; and that one should be careful not to get more colonies in an apiary than one's particular locality will support to advantage. A locality having both alfalfa and sweet clover will stand more than when it depends on alfalfa alone. The former will not yield honey invariably every year, while the latter will.

In the discussion that followed, it was somewhat a matter of surprise to a tenderfoot like me to learn how many colonies could be supported on a given area in Colorado. Notwithstanding only a tenth of the State is under cultivation, or ever likely to be, and that bees can be kept only in these cultivated areas, the average annual output from these limited portions of the State in honey is simply enormous, in spite of the fact that bees are packed in these localities so thickly that one would think there were would be no chance for any one to make a living.

SHOULD BEE-KEEPERS EMIGRATE TO COLORADO?

Now let me give a word of caution to the tenderfoot of the East who may look with longing eyes over toward Colorado. Take my advice. Keep out of it. The good bee localities are already overstocked, and I did not learn of a single place where an Easterner or anybody else could locate and go into bee-keeping profitably, or, perhaps I might better say, *honorably*, because the localities have been so thoroughly taken up that it should be a matter of honor for others to keep out. I know of no way in which one can go into these fields without buying some one out. It is true, that certain portions of Colorado that are now barren deserts may some day, when hydraulics is a little better understood than now, be made veritable little gardens of Eden; but until some method or plan is discovered whereby water can be elevated 500 or perhaps 1000 feet, some of the best agricultural lands, now deserted and dry, simply for want of water, will continue to remain so.

I know I am digressing somewhat from the subject of the convention. Well, we have left that, but I wish to say this for fear I shall forget it: It did seem too bad that there are *miles and miles and miles* of beautiful productive soils which could be reclaimed if water could *only* be put on them *somehow*, but which are now the home of the cactus, the jack-rabbit, the coyote, and the prairie-dog. Those towering Rockies catch nearly all the would-be rain-clouds, and, as a consequence, these regions are, perhaps, destined to remain arid, possibly for centuries to come.

"Why," said I, "Mr. Rauchfuss, is there not water in that desert piece within a hundred feet of the surface?"

"Yes, probably."

"Well, why couldn't they sink a lot of hundred-foot wells and erect over them as many windmills?"

Mr. Rauchfuss turned and smiled as only a Westerner can smile at the exaggerated notions of a "tenderfoot." "Why," said he, "they could not afford it. The narrow belts of land reached by irrigation could produce crops so much more cheaply that windmill irrigation would be impracticable; and no one is fool enough out here to sink a lot of good gold in holes of that kind in the ground; although we have plenty of fools," he continued, with a significant smile, "who fool away a lifetime and immense fortunes in trying to *find* gold down *other* holes."

OUR HOMES,

BY A. I. ROOT.

Bear ye one another's burdens, and so fulfill the law of Christ.—GAL. 6:2.

Every man shall bear his own burden.—GAL. 6:5.

I have heard people quote the two texts given above, in order to prove that the Bible is inconsistent; that it says one thing in one place, and then contradicts it and says the very opposite in some other place. I can hardly believe, however, that any one honestly thinks the Bible contradicts itself in this 6th chapter of Galatians.

Almost every one, or at least every one who has tried to make peace in the world, has had some experience in helping people to settle difficulties—or, perhaps I should say, in helping people to get along with each other. Sometimes two brothers can not agree. Yes, and there are even husbands and wives who do not get along, and think of separating. Some mutual friend—a Christian man, we will say—exhorts both of them to bear with one another; and if he is a wise man, very likely he has a confidential talk with each one individually. When the husband tells his grievances, and narrates how he tried to do every thing right when his wife persisted in doing every thing wrong, then this good Samaritan exhorts the husband not only to bear his own burdens, but to put up with unreasonable and inconsistent things in his companion. While talking to the husband he urges strongly that he, the husband, should try to believe he is largely if not mostly at fault. He exhorts him to bear all his own burdens, and a good deal more, for the sake of peace. When we wish to straighten a wire or a piece of iron pipe, we spring it beyond a straight line, because we know it will spring back more or less as soon as released. This we do to make it perfectly straight. Now, this peacemaker exhorts the husband to shoulder *more* than his share of the blame, in order to get him (like a piece of metal) in this overdoing to bear, probably, about his full share. Well, when he talks to the wife he pursues much the same tactics. He endeavors to convince her, also, that it is her Christian duty under the circumstances to put up with a great deal—perhaps more than really belongs to her. He tells the husband that he is the stronger of the two; that his shoulders are broad, and exhorts him to bear with the comparatively weak helpmeet. Then he tells the wife that woman's great weapon and vantage ground consist in being gentle and winning. If he can succeed in getting each one to promise to go *more* than half way, he has probably gained the victory; for humanity is so prone to selfishness, especially when it gets into a quarrel, that, when each one thinks that he or she is doing a great deal more than justice demands, he or she will probably get it about right.

Now, somebody who looks on, or somebody who heard the conversation, to each of the parties separately might say, "Why, that man is an old hypocrite. He talks one thing to the man, and then he talks another thing to the wife." Now, the man is not a hypocrite at all. He is not unfair, unreasonable, inconsistent, nor untruthful. He simply adapts his talks and exhortations to the individual. Whenever people are in a quarrel their judgment is warped, and they must be pulled strongly in the contrary direction to take out this crook. Of course, you can not often persuade such people that their judgment is biased and unreliable; and unless they exhibit more than usual reason and intelligence it will be a waste of breath to tell them so. We find people all around us with their judgment warped this way and that, and these prejudices get them into trouble. It is our business, in trying to establish harmony, to pull some people one way and other people in another way; and the one who takes the responsibility on himself of straightening out crooked people should be exceedingly careful that *he* is not warped nor prejudiced himself.

Not very far from where I sit writing, a woman recently murdered a man in broad daylight, or almost broad daylight. Nobody doubted her guilt, and yet she was cleared. The general impression is that she was good-looking and smart, and in this way she "warped" the judgment (or something worse) of the whole twelve on the jury. May God help us to recognize and beware of the things that may warp *our* better judgment or induce us to put judgment out of the question, and yield to downright dishonesty because the temptation is great.

In my talk about plants in our last issue I spoke of taking a slip from one of our golden salvias and making a potted plant of it in just a few days. Well, after the little plant got its roots out all around the sides of the pot, and it had sent out five or six beautiful clean golden-hued leaves, I took it over to the office with some other plants to show to the womenfolks in the factory. Every woman loves plants and flowers, and every man ought to be interested in them on that account, at least, if for no other. Well, every one uttered an exclamation of surprise at that dainty little salvia in its miniature pot; but before I had gotten half around with it I thought it was losing its bright attractive freshness; and when I got into the next room its leaves were *surely* beginning to curl up. Then I remembered the air in our rooms is much dryer and perhaps somewhat warmer than the damp air of the forcing-bed where it had been kept. So I hurried along for the sake of my little plant, to get it back to its accustomed home; but before I got around, its leaves were curling up more and more, its brightness all gone. It made me think of a bright, prattling, smiling baby that you take out of its own home and carry out among strangers. For a time the bubbling joyous spirit holds out; but the strange faces and the unfamiliar surroundings soon begin to make the little face look sober, and before you know it the little lips are puckered up ready for a cry. Kind and encouraging words do not help matters much. The baby must be gotten quickly back to its own home and to its *own mamma*, and even then it may take quite a little spell to get over its fright and resume its normal joyous spirit. It was just so with my pet plant. By the time I had got over to the greenhouse its leaves were all rolled up, and I thought it was going to lop down flat. I put it back in the warm damp forcing-bed, shut the lid down tight, and watched to see if I had really *killed it*, because I was so anxious to take it around among my friends and have it "show off." As the matter was to me one of great interest just then I sat down, watch in hand, and watched it. In five minutes I thought there was a little improvement. In ten minutes the leaves began to unroll, and the drooping stalk began to lift up its head a little; and the next time I came around it was just as bright and smiling, with its bright little leaves turned over toward the setting sun, as if it had not been disturbed at all.

I learned several lessons from the transaction. One is that little plants with soft roots and soft sappy foilage must be handled with much care, or they will get a serious setback. A friend of mine who is skillful with flowers says that many delicate plants will drop their leaves when you carry them from one greenhouse to another, or even from a dwelling-house to a new location; and it will take considerable time for the new leaves to come out and have them become acclimated to the new situation and order of things.

A year ago we sowed a lot of cabbage seed in a bed that was partially shaded, and rather too warm for the cabbage. Before I knew it they had become so long-legged that I told the boys I feared they were spoiled. They declared, however, they would be all right if we would put them outdoors and harden them off properly. As this was in the middle of winter I thought it was a little doubtful; but we happened to have a long bed warmed just right with exhaust steam, and a nice spell of weather permitted us to get them out in very good shape. Many of them were so long that we had to lay them down slanting to get the leaves clear down to the surface of the ground. By handling with considerable care until they had taken root in the new place we grew some of the finest cabbage-plants I have ever seen; and by the first of April we had hardened them off gradually so they stood a severe freeze without any covering at all, as we wanted the glass for other stuff.

Now, it would be folly to object to the use of warm glass greenhouses for starting plants because it makes them tender. It does make them tender and useless for planting out of doors at once; but by *gradually* hardening them off, as every gardener knows how to do, and not giving them setbacks, they may produce the very best of plants for any purpose whatever.

Human beings are much like plants. May God help us to remember they are of far more consequence than the plants. A harsh or careless word has dried up the life and wilted the happiness of more than one child; yes, and a harsh and unkind word has more than once driven the joy all out of the heart of the dear wife. Many people are bashful and timid; and what a cruel thing it is to wound needlessly and give pain to those who are anxious to do right, but who, because they may be amid new surroundings, inadvertently make mistakes! A boy from the country goes into town. Poverty or some other circumstance has kept him back, and he knows but little of the ways of the town. He is keenly sensitive, however, like my little plant. Now, how wicked it is to call attention to his inexperience!

When I was about 18 I was exceedingly timid and bashful, and, I presume, awkward. I commenced going to school in town, two miles and a half from my home on the farm. It took me a long while to become acquainted. After a spell, however, I did get to know the different pupils so I could talk with some of the smart good-looking girls at noon time. I remember they once sang something that pleased me exceedingly; and my enjoyment broke the crust of my diffidence so much that I tried to tell the young women how I felt. They seemed pleased, and I was feeling quite happy until a smart young man who had always rather looked down upon me because I was a farmer's boy, and did not wear patent-leather shoes, and smoke cigars, as he did, came up. I had just added that I did not mean to flatter the young ladies, but I actually felt all that I had said. He replied for them, something like this: "Oh! you need not worry about having flattered the singers. What you said was exceedingly *flat*, but there was no flattery about it." At this pun they all joined in a good-natured laugh, boys and girls as well—that is, all except myself. The pain and mortification stung me to the quick; and I do not think I ever saw that fellow afterward without feeling anew the pain of his jeering remark. All my joy and happiness were gone that day, and for days and weeks whenever I thought of it. I kept in the background, and sometimes I declared I would go out in the woods and live by myself, and keep away from humanity, especially from the well-dressed people in the towns and cities. I fear I did not have the gospel of Jesus Christ to brace me up at that time. I did not tell anybody, but I just kept thinking of the unkind speech. Now, I needed just then a little exhortation in the way of bearing burdens. I needed the assistance that only the words of the dear Savior can give, but I did not know it. The young man who sneered at me also needed a severe reproof, which I fear he never got. In one way, however, it was a useful lesson to me. I stuck to my books after that as I had not been doing before. I made some mighty resolves that the time should come when that fellow should look *up* to me, and not down on me; and it did not take very hard work nor very many years, because he commenced going down almost before I had started to climb up.

Of late my mind has been dwelling a good deal on boys who are getting to be almost men. These boys are in the hardening-off stage that I have spoken about with the plants. They are just coming out of the forcing-bed of childhood. They are getting able, and *are* able to stand a certain amount of contact with the frosty world; but it is dangerous business to give them too much freezing before the character becomes well "rooted." Paul in his message says first, "Bear ye one another's burdens;" and we who are older and stronger should keep a careful watch over the boys. Do not let them lift too hard; do not let them work too many hours; do not let them go out into the cold chilly world too long at a time. If they go to the great cities, keep an eye on them. Somebody has said we are crowding young men into office at such an early age, they get into the insane-asylum before they are old enough to be at their best. I fear it is somewhat true. Let us all try to bear the burdens a little of the younger and weaker. Let us be exceedingly careful about hasty censure, and inquire into all the circumstances before we severely reprove or criticise.

Then let me say to the boys, and to the men and women and children, bear up manfully under the burdens that seem to be put on you. Shoulder your responsibilities. If it seems to you you are loaded down a little more than is your share, be brave, and do not be in haste to complain. Many things that seem beyond our endurance at the time, we look back and laugh at afterward. Many a young woman has thought, when she first took charge of her home, it was just all she could possibly do to take care of that home; but as she kept on being faithful in few things she found it was not so hard after all. When the little stranger came into the household, for a time she thought she could not all alone bear this additional burden; but grace and strength and wisdom came as the burdens increased; and when one after another came till half a dozen were added to the household, she looked back and had a good laugh to think of the time when she worried and fretted over the responsibility and care of just one baby, and the father, to be ministered unto. Without God's promises I am not surprised that people become discouraged; but with these promises, and with the great blessings that continue to multiply and increase to all who are seeking God's kingdom and his righteousness before any thing else, I am sure no one ever need give up and think his burden too great for endurance.

HIGH PRESSURE GARDENING

BY A. I. ROOT.

Well, our greenhouse is now "a thing of beauty, and a joy" every day. I have got the "hang" of making cuttings until they grow every time — colei, salvias, geraniums, fuchsias, etc. But I have not got out of trouble after all. In fact, I begin to think it is better we should have troubles, or else we could not have that thrill of happiness that we experience when we fight through them and have occasional successes. For instance, one day Frank told me ants were crawling all over our orange-tree. I told him the ants would not do any harm; but pretty soon the tree began to look sickly and *filthy*. A careful examination showed the scale insect was working on the under side of the leaves, and the ants were following these scales as they follow aphides for the sweet exudation. The scales were their "cows;" and Peter Henderson says they will transplant these scales, not only from one leaf to another, but from one *plant* to another; and I was horrified to find scales actually on a young orange-tree quite a distance from the old one. Of course, I went for the books; but before I had invested much in whale-oil soap, pine tar, and such like remedies, one of the flower-journals said a tub of water at a temperature of 120 degrees is the best and cheapest insect remedy in the world —that is, for all greenhouse plants. Invert the plant and plunge the foliage into the hot water, and keep it there half a minute by the watch. Now, we have water almost boiling hot in one of our cisterns. It accumulates every day from the condensed steam that runs through the tiles. We very soon had a crock of water at 120°. Frank felt sure it would kill the plants, for it was so hot he could not hold his hand in it. But it did not kill the plant; but it did boil the scales and every other insect and fungus until they were dead enough. We rubbed off the scales from the under side of the leaf, and washed the tarry substance left by the ants in making tracks with their dirty feet; and the orange-tree looked like a new one, which indeed it was. We found red spiders on some of the roses, and mealy bug on the colei; but the hot water "cooked" every one of them. The ants left the orange-tree, but went to burrowing in the pot of a chrysanthemum. We dropped the plant out of the pot and removed most of the dirt, then dipped the plant, roots and all, in the hot bath, and that was the last of the ants. You see, hot water is my old remedy for grip, toothache, and earache. Oh how I do love to find remedies for our troubles in pure soft water, instead of being obliged to turn to drugs or physic!

My colei are now just radiant. Here is something from one of our old friends in regard to their care and culture:

> *Dear Friend*:—We notice with a great deal of pleasure that you have at last got to where we expected you would, sooner or later—into the flower business. We had often wondered that your love of flowers had not induced you to build a greenhouse for decorating your own grounds.
>
> We notice you are specially interested in colei. We grow a great many of them; and if we were on your side of the boundary line we would try to sell you some of our choice varieties. but you would no doubt be able to get them better and more conveniently in the United States. We, however, are getting some colei seed from Italy, and shall be glad to send you some. We grew some of it last year, and found it very good, producing same of the large-leaf varieties, very striking and very beautiful.
>
> We wonder if you have tried any of the beautiful ornamental foliage plants used for carpet-bedding, known among florists as alternanthea. With these you can make beautiful designs, colors ranging from yellow to bright red. They can be clipped to any shape We have a man who at one time worked for a very large establishment in Philadelphia, where they expended over fifty thousand dollars a year on such bedding-plants. Since coming here the party I refer to has made some of the most beautiful beds for our customers in Toronto that I have seen anywhere.
>
> A few hints on the culture of colei might be helpful. They require a high temperature in winter. They are very easily propagated by cuttings, and can be increased very rapidly toward springtime when the temperature is more favorable than it is at this time of the year. They do not thrive very well in a temperature lower than 60 degrees. The colors come out much better in a very much higher temperature. The worst enemy of the coleus is the mealy bug, which you no doubt have already discovered. The only remedy which seems to be effectual is constant syringing. If the plants become very badly infested, a tooth-brush and a great deal of patience is the only remedy.
>
> The alternanthea are generally propagated from cuttings. They are placed in shallow trays of sand in a freshly made hot bed. They delight in bottom heat, and will root in a day or two. It is just fun growing this kind of plant; and for carpet bedding and decorating there is nothing else so beautiful. The only drawback in connection with these plants and colei is that the first frosts usually nip them and spoil their beauty. They are rather tender. EDWIN GRAINGER.
>
> Toronto, Ont., Dec. 29.

By the way, the forcing-bed I have mentioned (it is a bed inside of a greenhouse, covered with a hinged sash) is proving serviceable in many ways. When I get in some new plants, and some of them are disposed to wilt when exposed to the full open air of the greenhouse, all I have to do is to put them into the forcing-bed or "hospital," as I call it, for half a day, or sometimes a whole day or more, until they take root enough to stand it. A coleus that I prized a good deal was snapped off short. I took the whole stalk, without any roots, and put it in the wet sand in the forcing-bed, and it is now sending out roots, and is a good plant again. The stem where the top was broken off is sending up shoots so they will be all right again.

My little salvia that I told you about has now got its little pot full of roots, and in its eagerness for air and moisture the roots are sticking out into the air between the soil and the sides of the pot. Perhaps this is because I still keep it in the damp atmosphere of the forcing-bed. And this reminds me, these little fine fibrous roots with eager mouths to take in air and moisture are the same thing, or pretty much so, that we find pushing into tiles for underdraining — that is, whenever said tiles carry a stream of water all summer long. Now, has any thing ever been done in the way of inducing roots of valuable plants to run into tiles so as to have the best sub-irrigation in the world? So far as I can learn, almost every plant pushes out these little fine fibrous roots, especially when it is making its first growth; and when a plant begins to bloom, these little roots are tenfold more active. It makes me think of the bustle of a sitting hen when she leaves her nest for a few minutes for refreshments. At this period she is not an ordinary individual; and so with the plant when it pushes out flower-buds. One of my golden salvias had been in bloom, or at least I called it in bloom, for several days. One morning I noticed one of the scarlet buds opening its mouth and thrusting out something that looked like a blood-red tongue. An hour later the tongue had protruded quite a piece; and by night this fiery-red tongue was out almost an inch. Just about this time I decided it was a honey-plant, and one of the mint family. Not long afterward the ants seemed to have come to a similar conclusion, for they were ducking in and out at the tip of that tongue at a rate that showed they had found *something* good.

MUSHROOMS AND GRAND RAPIDS LETTUCE.

Almost every year we have more or less beautiful mushrooms in among our lettuce. In a recent number of the *Practical Farmer* friend Greiner recommends planting mushrooms in with the lettuce when you make the bed. The conditions of temperature, soil, and moisture that suit the Grand Rapids lettuce are just about right for mushrooms. You can get the best of mushroom bricks for only a few cents a pound; and if you break them up into pieces the size of a walnut, and plant them one or two feet apart in the lettuce-bed, you will have lettuce and mushrooms together after a while, and your mushrooms will keep coming up more or less winter and summer wherever the soil may be thrown, outdoors or in I think it was one of our government bulletins that said mushrooms are an excellent substitute for beefsteak — that is, when the price of the latter is away up. At the present price of steak there is now an additional incentive to grow mushrooms. In our family one mushroom in a kettle of soup not only takes the place of meat, but of oysters also; and with a little pains the mushrooms should not cost nearly as much as either of the others.

WHAT CAN BE DONE WITH CARROTS ON ONE SQUARE ROD.

We had a piece of carrots one rod square, and got 12 bushels from it, and sold them at 30 cts. a bushel.

The Craig potatoes didn't do very well here. We

have had them a few years now, and the biggest we got was as large as a hickorynut. **FRED A. HUND.**
Peters, Mich.

Why, friend H., your yield of carrots was astonishing. Twelve bushels to the square rod would be at the rate of 1920 per acre. Have you not made a mistake? Your report on the Craig potatoes is also astonishing, but the astonishment is in the other direction. With us, every year since it was originated it has given us the largest yields and almost the largest potatoes of any thing we grow. In fact, Mrs. Root complains that they are *too* large to cook. Your ground must be specially good for carrots, and specially bad for Craig potatoes. Will you tell us a little more about the carrots—how the crop was handled? what kind of seed?

Special Notices by A. I. Root.

THE NEW EGG-FARM.

Some 25 or 30 years ago the *American Agriculturist* gave a series of articles by H. H. Stoddard, entitled "An Egg-farm." The very first chapter interested me perhaps as much as or more than any thing else I ever read before in my life. It was not because I was specially interested in poultry, but the ideas of the writer seemed to apply to all animated nature, man included. I read each chapter as it appeared, and counted the days until another *Agriculturist* would probably come. I corresponded with the author, and even started an egg-farm; but other business that must have my attention prevented me from working it out, as I have wanted to do all my life. When I visited H. A. March, of Puget Sound, I was delighted to find there a successful egg-farm in practical operation on the plan laid down by Mr. Stoddard. During the years that have passed we have sold hundreds and may be thousands of Stoddard's Egg-farm; and I have always felt happy to see boys and girls, and men and women, become enthusiastic from the same book that pleased me so much.

I have wondered many times that Mr. Stoddard had not put an appendix to this book, telling us how this creation of his own had "panned out" during the intervening years. Well, just now we have a large new book, entitled "The New Egg-farm." It has over 300 pages and 150 illustrations, embodying all that is most valuable from the author's first book, to which are added the results of a lifetime of work, invention, improvement, and observation. As I look at its pages my old enthusiasm comes up again, and I almost feel sad to think that I can not drop almost every thing else and "play with the chickens;" but you know I promised Mrs. Root that I would not start out in any more new enterprises to add to my already too many cares. But now for the egg-farm.

Stoddard's great theme is *exercise* for fowls, and, in fact, exercise for everybody who is sick. He says if you want hens to lay, don't warm them up with steam-pipes or hot water; do not even put them in a greenhouse, for the sun will make them too hot by day, and leave them too cold by night. Instead of outward artificial applications to make them warm, give them open sunshine, and teach them to *scratch*. You know a hen is always happy when she is digging up your (or your *neighbor's*) flower-beds; and, by the way, she is always healthy, and lays eggs too. Well, now, just develop this craze. In winter give them leaves, chaff, straw, and scatter the grain all through the trash, and let them dig and scrape to their hearts' content. If you have not much land, give them a long, narrow runway; then throw out inducements to them to run and "scratch" from one end of this runway to the other. But this is not all. Friend Stoddard is not content with teaching them to use the muscles of their legs. They must be taught to use their wings as well; and this exercising commences with the chicks just as soon as they are old enough to make their little legs go. As soon as they can make a hop over a board they are taught to do it; and as they grow older the little fence is made higher till they will go over it "on the fly," using both wings and legs; and this exercise is given the laying hens outdoors in the open air, as far as the weather will permit, all winter long. This running and scratching and flying will cure all ills that chicken flesh is heir to; and if they cut and run *enough* all day long, they will not need any "balanced ration." Give them whatever you have handy, only so you keep them busily employed.

Now, what interests me so greatly is that friend Stoddard's logic applies so patly to humanity as well as to chickens. To arouse their enthusiasm, get them to work (in the open air if possible); keep them busy at something they like, and they will be happy and well. Why, I verily believe that one great reason why people get well with patent medicines and mental science, etc., is that the excitement about it gets the blood to stirring in their sluggish veins, and then, lo and behold! they are well. Of course, one man can not spend all his time in keeping 50 or 100 hens and chickens running and scratching; but with the cheap home-made machinery described in this new book, one man can keep 1000 or several thousand laying hens busy and happy.

I have wanted to visit Mr. Stoddard, and see his egg-farm in working order, all my life; and I feel just now as if it would be the next trip I make anywhere as soon as the weather is suitable.

The book can be mailed from our office for $1.00; or we will club it with GLEANINGS for $1.50. If you are a subscriber to GLEANINGS we will mail it to you for 75 cents.

FORAGE CROPS OTHER THAN GRASS.

The above is the title of another new book by the O. Judd Co., by Prof. Thomas Shaw, formerly of the Ontario Agricultural College. Prof. Shaw has made himself a reputation that should stand for ages, in his excellent articles on weeds and how to eradicate them. I have been astonished and delighted to find that we have at least one man at the present day who is an enthusiast on the matter of weeds, and has learned so much about them that he can tell friends from foes. Well, in this new book just out, among other forage crops he discusses sweet clover; and I take pleasure in copying what he says, hoping it may end the discussion as to whether *this* plant is a friend or a foe:

> Sweet clover (*Melilotus alba*) is so named, doubtless, from the fragrance of the odor which characterizes it. It is also frequently called Bokhara clover. The two species, *Melilotus alba* and yellow sweet clover (*Melilotus officinalis*), are closely allied, but the blossom of the former is light-colored, while that of the latter is yellow.
>
> Sweet clover is a strong, vigorous-growing biennial. It is branched and upright in its habit of growth. It is one of the most hardy plants of the clover family. When once firmly rooted it has great power to withstand drouth and heat, and it can also endure low temperatures. Being a ravenous feeder it is able to maintain itself in soils too poor to sustain other species of the clover family. The writer has succeeded in growing sweet clover on a vacant lot in St. Paul, from which several feet of the surface soil had been removed, insomuch that only sand and gravel remained. Moreover, it is a legume, and one which has much power to renovate soils. A plant, therefore, which is possessed of such powers should not be looked upon as worthless. That it is so is the popular idea. It has even been looked upon as a weed, and some countries and states have included sweet clover in the list of proscribed noxious weeds.
>
> But sweet clover has been grown to some extent to provide hay for live stock in the cured form, and also to provide pasture. And it has been grown to furnish food for bees when it is in bloom. It has been grown for all these uses in the South, more particularly in the States of the lower Mississippi basin. For providing hay it is not very suitable, for the reasons, first, that it is woody and coarse in character; second, that it is difficult to cure; and, third, that it is not much relished by live stock. They do not care to eat it when they can get a sufficiency of other food, as corn, sorghum, or other clovers. As a food for bees it is excellent; and if a part of the plot or field is cut before coming into bloom, the season of bloom will be much prolonged. It is also sown along the sloping embankments and the sides of railway cuttings. The object sought is to prevent these from washing, and it has proved highly serviceable for the purpose.
>
> Sweet clover has not been much grown for pasture, but for such a use it may yet prove to be of value. When sheep have access to a variety of grasses they will probably pass sweet clover by, even when it is young and tender. But if confined to such a pasture when it first begins to grow, they would soon begin to crop it down. To force animals thus to eat food under constraint is not good for them; but thus it is that in

some instances sheep have to be confined on rape, and forced to eat it through sheer hunger. In a short time they become very fond of the rape. So likewise they may be taught to eat sweet clover. Of course, where other and better kinds of clover will grow, it would not be wise to trouble with sweet clover. But in the semi-arid belt east of the Rocky Mountains, and in the poor sandy soils of the South, it may yet be found that an important mission awaits this plant; first, in growing a crop that will renovate the soil when plowed under and increase its power to hold moisture; second, in furnishing food for bees; and, third, in providing pasture. Hay should be sought from it the first year rather than the second.

Sweet clover can be sown only in the spring or summer in very cold latitudes; but in those that are mild it can be sown in the autumn or spring, preferably the former. Usually not less than 15 pounds of the seed is sown to the acre. In the South it is frequently sown on the surface of stubble land after the crop has been harvested; and when thus sown it is simply covered by the harrow. If sweet clover is kept from blossoming, the land will soon be freed from it when it is so desired. Although sweet clover seeds profusely, the high price of the seed at the present time stands much in the way of extending its growth.

In regard to the closing sentence in the above, I presume friend Shaw was not aware of how low sweet-clover seed is now sold by honey-producers. Prof. Shaw has, perhaps, been instrumental, more then any other one man, in introducing Dwarf Essex rape throughout the United States—a plant that has already made its way, and is now a great boon to sheep-growers in particular. The book treats of Indian corn, the different sorghums, all the clovers, rape, cabbage, cereals, millets, root crops, etc. It has about 300 pages and many illustrations. Price $1.00. We can mail it from this office.

PRICES OF SEEDS FOR 1900.

In our next issue we will give our usual abbreviated list and prices. As a good many of the catalogs are in, the prices on the staple commodities are now pretty well settled.

GRAND RAPIDS LETTUCE.

I am exceedingly glad to tell you that the 25 lbs. of Grand Rapids lettuce, California grown, produces the handsomest crop, every plant true to name, so far as we have yet discovered, of any I have ever offered for sale. Now is the time to sow the seed if you want to hit the big demand at just the right moment. The price is only 5 cts. per ounce; 1 lb., 50 cts. If wanted by mail, add 9 cts. for postage.

SPECIAL NOTICES BY BUSINESS MANAGER

UTAH HONEY—BOTH COMB AND EXTRACTED.

This is about the finest quality of honey we have had in several years. We can still supply the extracted in 60-lb. cans at 10c per lb.; 10 cans at 9½c per lb., and the comb honey, 24 sections in a case, at 16c per lb. We expect to close this out soon, so send your order promptly.

CARLOAD ORDERS.

Carload orders from dealers are coming in at a lively rate, and we now have unfilled orders for from 12 to 15 cars which we must get out as rapidly as possible. We have a very large stock to draw from, and have most of our supplies in materials of all kinds on hand for the season, including over two million feet of dry pine and basswood lumber. We never were in better shape to handle the business that comes our way than at the present time. At the same time, when orders come in at the rate of two carloads a day we can not ship them all at once. We trust none will suffer inconvenience by some unavoidable delay. Orders do not roll in at this rate all the time.

A. B. Williams & Co., of Cleveland, who some time ago furnished quotations of the Cleveland honey market for GLEANINGS, have made an assignment; and from all that we can learn their creditors will get very little. The liabilities appear to be from $10,000 to $12,000, and assets about $1500. We have not published their quotations the past season, because we were not fully satisfied with the way they treated their shippers. The principal complaint was their tardiness in answering letters. We did not have a sufficiently definite case against them to warrant our publishing a word of caution in GLEANINGS, yet we did not have sufficient confidence in them to continue publishing their quotations. They had 10 cases of our honey unsettled for when they failed. We know of several others who have likewise suffered loss. When I called on them about three weeks ago they had very little honey in the house, but I do not know how much they had sold, and had not yet settled for. I hope very few have lost at their hands.

THE COMING CHICAGO CONVENTION.

The date set for the next National Bee-keepers' Association (or the United States Bee-keepers' Association) is the 28th, 29th, and 30th of August next, the first session being Tuesday evening, the 28th. The place of meeting is Chicago during the time of the Grand Army encampment, when low rates of a cent a mile will be in force all over the country. A program has been in process of preparation for some time back, and among some of the special features will be one and possibly two stereopticon lectures on two separate evenings. The Question-box for the latter half of the day sessions will be another feature. The questions will be of a character to interest advanced bee-keepers as well as beginners.

Every effort is being put forth to make this one of the best in point of discussion and attendance that has ever been held. Chicago is a central point, and easily accessible from every direction, and there is no reason why there should not be a large meeting.

Local associations, State and county, should see to it that delegates are appointed to attend this meeting.

POST-CHEQUE MONEY.

Our attention has been called to a system of currency called "post-cheque money," which consists of fractional bills of denominations of 5, 10, 15, 25, and 50 cents of small size, and 1, 2, and 5 dollars the size of ordinary bills. These are to be used for ordinary currency in passing from hand to hand, but on one side are arranged blanks for affixing a postage stamp, and writing in the name and address of the party to whom you wish to make a remittance. Sign your own name and address. The bill then becomes a check for safe transmission through the mails. When the party to whom it is sent receives it he acknowledges the receipt of payment in a blank provided, presents it at the postoffice, and receives a fresh one in its place, which may be passed as money. The advantages of this system will be very apparent to one who examines it. It makes it very convenient to send a remittance of a small amount in a way that is safe. To inclose an ordinary bill in a letter is considered rather risky. If the latter is stolen, the money contained may be used by the one who gets it, and can not be identified; whereas, with post-cheque money, one of these bills filled in as provided becomes as safe as an ordinary bank check or draft, and is not subject to the usual charge for collection that banks make on checks, nor to the inconvenience of going to the postoffice to obtain a postal money order. The government still retains the revenue feature by stamps affixed when these bills are written upon and remitted through the mails. A bill will be introduced in both houses of Congress this winter for the adoption of this post-cheque money. Those of our readers who are interested should send to C. W. Post, Battle Creek, Mich., for a copy of the pamphlet setting forth the system and its advantages; and if they approve, then they should write to their representatives in Congress, urging their support of the measure.

CONVENTION NOTICES.

CALIFORNIA BEE-KEEPERS' CONVENTION.

The tenth annual convention of the California State Bee-keepers' Association will be held in the Chamber of Commerce, at Los Angeles, on Feb. 21 and 22, 1900. Convention will be called to order at 1:30 P. M., on Feb. 21. At this time the railroads will sell round-trip tickets to everybody, for one and one-third fare, on account of the Industrial, Mining, and Citrus Exposition, which will be held in Los Angeles. Tickets good for ten days. Let every bee-keeper bring some hive, tool, or experience which he has found valuable, and we will have a good convention.

R. WILKIN, Pres.
J. F. M'INTYRE, Sec.

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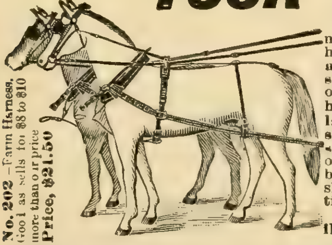
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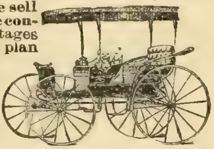
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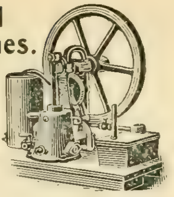

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WANTED.—A young man, with small family, to work on farm by the year. Must be sober and industrious, and well recommended. Will pay good wages, or will give the right man a working interest in growing plants and nursery stock. Four churches and a fine graded school within one mile of place. Address H. H. AULTFATHER, Minerva, Ohio.

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WANTED.—To exchange for honey or offers: One dovetailing-machine, one drum sander, one sticker, one cutter-head for cutting entrances in sections, one planer, 24-inch, double cylinder; all in good condition. Address

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TO EXCHANGE 40 acres clear prairie land on railroad, 25 miles from Houston, Texas, valued at $5 per acre, for Barnes saw, Cowan extractor, and bee-supplies. E. B. ROOD, Braidentown, Fla.

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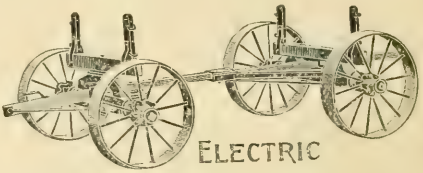

The front and rear hounds are made from the best angle steel, which is neater, stronger, and every way better than wood. Well painted in red, and varnished. Extra length of reach, and extra long standards supplied without additional cost, when requested. This wagon is guaranteed to carry 4000 lbs. anywhere. Write the Electric Wheel Co., Box 000, Quincy, Ill., for their new catalog which fully describes this wagon, their famous Electric Wheels, and Electric Feed Cookers.

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Either Golden Italian, 3-banded Italians, or Holy Lands, your choice. Nothing but the best of stock bred in 3 different yards, several miles apart. Send for circular and price list. It gives methods of queen-rearing, honey production, etc. Prices, either race: Untested, March, April, and May, $1.00 each; 6 for $5.00; per dozen, $9.00. Tested, $1.50; 6 for $8.00; per doz., $15.00. Untested, June, July, Aug., and Sept., 75c; 6 for $4.25; per doz., $8.00. Tested, $1.25; 6 for $6.75; per doz., $12.00. Special discount in large quantities. Breeding queens a specialty.

O. P. HYDE & SON, Hutto, Texas.

REMOVED!

EARLY QUEENS. W. H. Laws has removed his entire queen-rearing apiaries to Round Rock, Texas, where he will be better fitted than ever to fill orders for the LAWS strain of FAULTLESS 5-BANDED bees the coming season. BREEDING QUEENS always on hand. Price $2.50 each. I am also breeding the leather-colored stock from imported mothers. Tested queens, either strain, $1.00; 6 for $5.00; untested, 75c; 6 for $4.00. Queens ready in season.

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E. T. BLOOD, MANAGER.

Avoid Disappointment.

The bees and queens that I advertised and sold last year as "Superior Stock" are far superior to the average run of Italians. There is no doubt of this. I believe them to be the *equal*, in industry, docility, and hardiness of *any stock in this country*—possibly they are *superior* to any. My views are the result of knowledge as to how this strain originated and was developed; by repeated trials of this strain, year after year, in my own apiary, by the side of the best obtainable stock, and by reading letters from men who, like myself, have given it a trial. The most disinterested proof that I have of its superiority is that sometimes a man, when ordering one of these queens, will write: "I have had queens from [here follows a list of breeders] but the one I got from —— [mentioning the breeder who furnishes me this stock] produces bees away ahead of any other. If you have something better, it must be pretty good, and I want it." A great many bee-keepers have written me in the past few months that they were going to try this stock next summer. To these men I would say that I am now receiving orders almost daily for delivery next spring. These orders are booked as they come in, and will be filled strictly in rotation. If you are thinking of getting a queen of this strain, and rearing queens from her to stock your apiary next summer, don't wait until next May before sending your order If you do, you will probably find your name the last in a list of some 200 or 300 orders, and you may be compelled to wait some little time.

Perhaps you may think this "a scheme" to induce you to send in your order now. No; I am telling of this so that those who are intending to get a queen in the spring may not be disappointed.

The price of a queen is $1.50; but I guarantee safe arrival, safe introduction if instructions are followed, purity of mating, and entire satisfaction. Any time within two years if the queen proves unsatisfactory she may be returned, and the money will be refunded, and 50 cts. extra sent to pay for the trouble.

If you wish to know more particulars about this stock before ordering, send 10 cts. and ask for three back numbers of the Review in which it is described; and the 10 cts. may apply on a subscription, if you send one, or in the purchase of a queen.

A SPECIAL OFFER.

For only $2.00 I will send the Review for 1900, throw in 12 back numbers free, and send a queen of this Superior Stock next spring.

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One-pound square, $4.70 per gross, with corks. Five gross at $4.50 per gross. These are perfect flint jars, not seconds.

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Wholesale or retail. If you are a dealer, or can use or sell a quantity, we will be pleased to send you our special price list via "Uncle Sam's Route." Catalog of popular supplies free.

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Ohio Maple Syrup.

Do you know that Ohio produces the finest Maple Syrup to be had anywhere?

Do you know that, according to the pure-food laws of this State, every gallon put up here must have the name of the producer on the label, and there is a heavy fine for adulteration?

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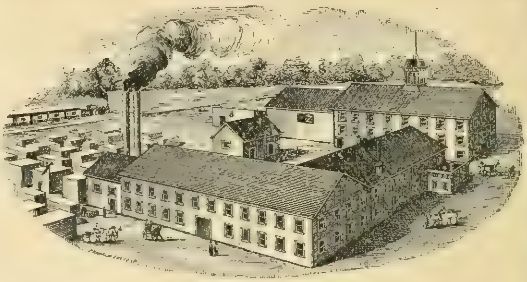
We have the best-equipped factory in the West. Capacity, one carload a day; and carry the largest stock and greatest variety of every thing needed in the apiary, assuring BEST goods at the LOWEST prices, and prompt shipment. We want every bee-keeper to have our FREE ILLUSTRATED CATALOG, and read description of Alternating Hives, Ferguson Supers, etc. *Write at once for a catalog.*

We also manufacture TANKS of either wood or galvanized steel, all sizes, any form, and for all purposes. Price list free.



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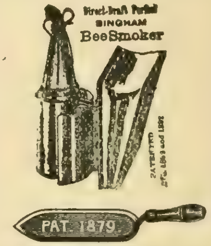
Smoke Engine (largest smoker made.)	4-inch stove.	Doz.	$13.00;	each, by mail,	$1.50
Doctor	3½-in.	"	9.00;	"	1.10
Conqueror	3-in.	"	6.50;	"	1.00
Large	2½-in.	"	5.00;	"	.90
Plain	2-in.	"	4.75;	"	.70
Little Wonder (wt. 10 oz.)	2-in.	"	4.50;	"	.60
Honey-knife		"	6.00;	"	.80

Bingham Smokers have all the new improvements. Before buying a Smoker or Knife, look up its record and pedigree.

FIFTEEN YEARS FOR A DOLLAR; ONE-HALF CENT FOR A MONTH.

Dear Sir:—Have used the Conqueror 15 years. I was always pleased with its workings, but thinking I would need a new one this summer I write for a circular. I do not think the 4-inch Smoke Engine too large.
January 27, 1897. Truly, W. H. Eagerty, Cuba, Kansas.



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T. F. BINGHAM Farwell, Michigan.

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1 Best Breeder, $4.00.
Nuclei, $1 to $10 in season.

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Plus carload rate freight.

Bees, Honey, and Beeswax bought and sold.

Watch My BARGAIN COUNTER in April.

Coin, double or single standard, Uncle Sam's Postoffice money-orders, bank draft, or registered letter, will get you prompt service.

W. O. VICTOR,
WHARTON, Wharton Co., Tex.

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Honey Column.

CITY MARKETS.

CINCINNATI.—The demand for extracted honey has eased off since the holidays, with prices about as follows: Fall and southern extracted, 6@7; clover, 7@8½; good demand for fancy white comb honey at 16@17. Beeswax, 26.

C. H. W. WEBER,
Successor to Chas. F. Muth & Son,
Jan. 18. 2146-48 Central Ave., Cincinnati, O.

ALBANY.—Honey in light supply and good demand. We quote fancy white, 15@16; No. 1 white, 14@15; mixed, amber and dark, 11@14. Extracted white, 8@8½; amber, 7@7½; dark, 6@6½. Beeswax, 25@27.

McDOUGAL & CO.,
Successors to Chas. McCulloch & Co.,
Jan. 20. Albany, N. Y.

SCHENECTADY.—The market is very quiet, as is usually the case at this season of the year. Stock on hand very small, with no change in prices.

Jan. 20. C. McCULLOCH, Schenectady, N. Y.

KANSAS CITY.—The supply and demand are light since the first of the year. The demand for extracted is not so good. We quote No. 1 white comb, 13½@14; No. 2, 13@13½; No. 1 amber, 13@14. Extracted, white, 7½@8; amber, 7@7½. Beeswax, 22@25.

C. C. CLEMONS & CO.,
Jan. 19. Kansas City, Mo.

BOSTON.—Our market continues without change in price, although the demand is very light, owing very largely, we think, to the high prices prevailing. Still, with the small stock on hand we believe that the high prices will continue. BLAKE, SCOTT & LEE,

Jan. 19. 57 Chatham St., Boston, Mass.

BUFFALO.—The supply of honey in our market is light. There is demand enough to keep it cleaned up at about the prices quoted. Fancy, 15@16; A No. 1, 14@15; No. 1, 13@14; No. 2, 11@12; No. 3, 10@11; fancy dark, 11@12; good dark, 10@11. Extracted white, 8@8½; dark, 7@7½. Beeswax, 29@30, good demand.

Jan. 18. W. C. TOWNSEND, Buffalo, N. Y.

PHILADELPHIA.—This market is getting low on comb honey; very little on hand. We quote fancy, 15@16; No. 1, 13@14. Extracted, fancy light, 8@9; amber, 7@8. Beeswax, 28. We are producers of honey—do not handle on commission. WM. A. SELSER,

Jan. 20. 10 Vine St., Philadelphia, Pa.

DETROIT.—Fancy white, 16@17; No. 1, 14@15; dark or amber, 10@13. Extracted, white, 8; amber and dark, 6@7. Beeswax, 24@25.

Jan. 19. M. H. HUNT & SON, Bell Branch, Mich.

CHICAGO.—The trade is taking but little honey. The mild weather may be one cause, but the winter is two-thirds past, and therefore the season is short in which to dispose of what remains unsold. All of our customers speak of a light demand. Prices remain as formerly quoted, but would be shaded to move round lots. R. A. BURNETT & CO.,

Jan. 23. 163 S. Water St., Chicago, Ill.

NEW YORK.—There is a steady demand for all grades of comb honey. The receipts are not heavy. We quote fancy white, 15@16; No. 1, 13½@14½; amber, 11@12; buckwheat, 9@11, according to quality. Extracted, California white, 8½@9; light amber, 8@8½; white clover, 8½; amber, 7½; buckwheat, 6¾@7 for kegs, and 7@7½ for tins, according to quality but with very little trade. Florida extracted, 8@8½; light amber, 7½@8; amber, 7@7½. Other grades of Southern at from 75@80 per gal. Beeswax, demand a little more active at 27½@28. FRANCIS H. LEGGETT & CO.,

Franklin, West Broadway, and Varick Sts.,
Jan. 11. New York City.

NEW YORK.—Comb honey is not in very great demand since the new year—not any quantity to speak of lying around, but enough to meet the present demand. We expect trade to increase, possibly, after Feb. 1. We quote fancy 1-℔. section, clover, 15@16; A No. 1 white, 1-℔ section, 14@15; No. 1 white, 1-℔. section, 12@13; No. 2 white, 1-℔ section, 11@12; mixed, 1-℔. section, 9@10; fancy buckwheat, 1-℔. section, 10@11; No. 1 buckwheat, 10; No. 2 buckwheat, 9. Extracted in fair demand. Fancy white, 8@8½; light amber, 7½@8; amber, 7@7½; buckwheat, 6½@7. Beeswax, 27@29, according to quality.

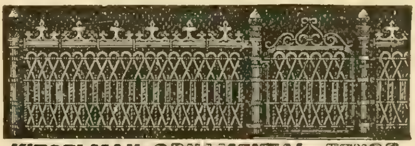
CHAS. ISRAEL & BRO.,
Jan. 23. Cor. Canal and Watts Sts., New York.

WANTED.—Comb and extracted honey. State price, kind, and quantity. BLAKE, SCOTT & LEE,
57 Chatham St., Boston, Mass.

WANTED.—Your honey. We will buy it, no matter where you are. Address, giving description and price.
THOS. C. STANLEY & SON, Fairfield, Ill.

WANTED.—Comb and extracted honey. State price, kind, and quantity. R. A. BURNETT & CO.,
163 South Water St., Chicago, Ill.

WANTED.—Extracted honey of all kinds. Mail sample, and price expected delivered at Cincinnati. I pay spot cash on delivery. C. H. W. WEBER,
Successor to Chas. F. Muth & Son,
2146-48 Central Ave., Cincinnati, Ohio.



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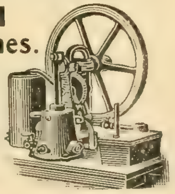
More ornamental than iron and as cheap as a wood picket fence. **Over 50 different Designs.** Catalogue free.
KITSELMAN BROS. Box 51 **Ridgeville, Ind.**



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3-4 and 1 H. P. For Separators, Churns, etc., Stationary to 20 H. P. Pumping Engines all sizes.
Send for circulars stating size and for what use.
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BOX 17, Racine, Wis.

Best Alfalfa Honey.

IN 60-LB. CANS.

This is the finest white alfalfa extracted honey, two cans in a box. Prices, f. o. b. Chicago, 9½ cts. a pound; 4 cans or more, 9 cts. As the quantity of honey on hand is limited, better order soon.

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"SCIENTIFIC QUEEN-REARING."

Best book on the subject. Bound in cloth; regular price $1.00. Will mail it with the *Am. Bee Journal* one year—both for only $1.50 to a NEW subscriber. Great bargain.

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Weekly—16 Pages—$1.00 a Year.

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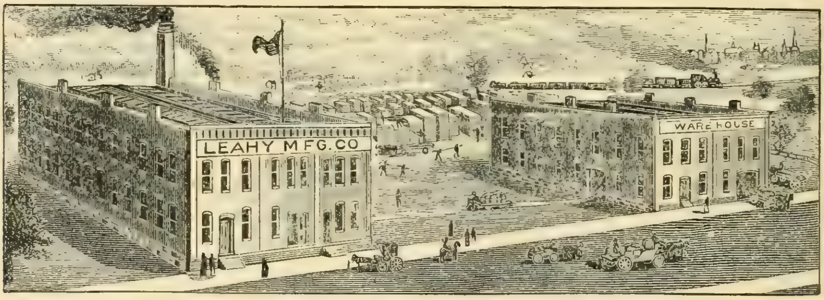
GEO. W. YORK & CO., 118 Michigan St., Chicago, Ill.



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GLEANINGS IN BEE CULTURE
A Journal Devoted to Bees and Honey and Home Interests
Illustrated Semi-Monthly
Published by The A. I. Root Co.
$1.00 per Year Medina, Ohio

Vol. XXVIII. FEB. 1, 1900. No. 3.

STRAY STRAWS FROM DR C. C. MILLER

THAT PLAN of getting the water out of a honey-can with a sponge, p. 53, might be finished up by setting the can on the stove. Our folks omit the sponging. No danger if the stove isn't too hot and the can not left too long.

FRIEND A. I. ROOT, that's an admirable piece of work you've done on p. 60 as a peacemaker. If you ever hear that my wife and I have parted, pack your grip right straight, and come and reconcile us. I'll pay freight on you to Marengo.

THAT QUESTION of J. T. VanPetten, p. 51, is a rather troublesome one, and applies in many cases. "After I've been to extra expense to get ahead of my fellow, and then he is to the same expense to get even with me, what has either gained?"

AMERICAN BEE-KEEPERS ought to be farther ahead at the end of the century than the Germans. The German bee-journals have started in on the 20th century, while in this locality we have nearly a year of the 19th left. [See Pickings.—ED.]

I ARISE to inquire why it is that we have no reports nowadays from apicultural experiment stations. There's an unsatisfied longing ever since Hon. R. L. Taylor left off his very interesting reports. I wish he had never departed this life as an experimenter.

THAT CUT on page 57 is an exact picture of my latest honey-extractor. I bought it from J. L. Peabody himself, somewhere about 1870. Since I gave up extracted honey it seldom gets a chance to work; but when it does, it works just as well as ever. But, of course, it isn't a Cowan.

MR. HONE "thinks the dairy business detrimental to bee-keeping, as cattle eat sweet clover," etc., p. 43. Not in this locality. I'm right in the heart of the Elgin dairy region, more butter being made in a given area around Marengo than Elgin, and I'd be sorry to have the cows killed off. It's true they eat the flowers; but that's what keeps up a succession, lengthening the season.

WHY, OH! WHY, do you print that long-tongue talk, p. 55? I've been quiet about it for a long time, and now you stir me all up again with the question: If there's so much difference in bees' tongues that some tongues are 38 per cent longer than some other tongues, why may we not breed for tongues as well as colors?

"I SOMETIMES WISH," says ye editor, p. 47, "I were free to go back to those old days now." You'll outgrow that. I'm at least five years older than you, and my best years have been since I passed your age. And I'm expecting it will be better farther on. [I did not say that I *always* wished. No, I would not go back, in my cool, sober moments, to the days of childhood. I am quite content to be just where I am.—ED.]

HAVE YOU PUT Doolittle cell-cups on the list of bee-keepers' supplies? If so, at what price? [No, yet I suppose we ought to; but before we put them on the market we desire to perfect a machine that will make them in a wholesale way, so we can sell them by the peck, and not by the single one. At present I fear you would not like to pay the price. They can be made by the dozens very cheaply, when one has nothing else to do, and the only reason why we have not made them is because we have not had time to put brains into a machine for doing it.—ED.]

I WANT very much to see A. I. Root. I want to see how he looks since he has become interested in flowers. I'm sure he must be a nicer man—and a better man. [Yes, it is indeed true—A. I. R. is riding another hobby. You ought to see the enthusiasm that plays on his face. He grows lettuce and a little garden-stuff in the greenhouse, to be sure, but it is easy to see that his new fascination is growing posies. Every once in a while he calls us over to see his latest acquisition. Say, doctor, you ought to be here and hear him talk bulbs, roses, variegated colors, etc.—ED.]

THE ADVANTAGES of tall sections are well put by you on page 51, Mr. Editor, but the last one won't do: "A tall section will stand shipping better than a square one, in proportion as it is taller." Do you think a section ten inches high will be more solid than one an inch high? It's true the tall one has more perpendicular attachment, but it has more perpendicular weight. A section an inch high will ship safely if secured at top and bottom with no side attachment, but one ten inches high would come to grief. See? [Carrying the sentence to its logical conclusion, perhaps it is a little strong; but what I meant to convey was that a section 4×5 will stand more hard usage in shipping than a section 4¼ square.—ED.]

GERMAN BEE-KEEPERS are somewhat moved over the death of *Die Nordlinger Bienenzeitung*, at one time the ablest of the German bee-journals, and the oldest in Germany, having lived 55 years (wasn't it the oldest bee-journal in the world?). Its able editors were succeeded by Herr Dickel, who used its pages to advocate the theory that all the eggs laid by a queen are alike, and that workers can rear a queen out of drone eggs, and then it died. [The demise of this, the oldest of all bee-journals, was talked over after the sessions of the Geneva convention. It seemed rather too bad that a journal with such a history could not have continued its name at least. If it had lived in this country, at least one of its cotemporaries would have jumped at the chance of buying its name.—ED.]

R. C. AIKIN is striking some heavy blows nowadays, in *Progressive*, in favor of selling honey in the candied state. The fact that he has succeeded—grandly succeeded—in it himself, is an argument hard to be overcome by those who say the thing can not be done. If I had a trade in extracted honey that I expected to close with the year, I'd sell honey only while liquid, gathering it up from time to time to melt; but if I expected to stay in the same place for three years, I'd train my customers to do their own melting. Might be tough the first year, but I'd be solid with my customers after that. [There is no denying the fact that Aikin has done some grand work in demonstrating that there is a sure and steady market for granulated honey. It was uphill work with him at first, but now his customers expect it, and some even prefer it to candied.—ED.]

THE *Chicago Record* reports 220,518 U. S. licenses for the manufacture and sale of liquors, and counts three persons employed for each license—a low estimate (some brewers and distillers employ several thousand men), making one liquor-seller to every 114 of the entire population. Yet there are people who would utterly wipe out so important an industry, throwing out of comfortable employment about one man out of 23. Just think of it! [Yes; and, unfortunately, there are hundreds and thousands of people who, if they do not really believe such logic, try to make others believe it. But the tide is changing, and the time will surely come when such talk will be regarded as the rankest heresy. Believe it? I believe it as much as I believe there will be a sun to-morrow, even if I can not see it.—ED.]

MR. EDITOR, on p. 54 you suggest a ⅞ strip for the Doolittle division feeder, "suppose bees did get drowned." That ⅞ strip in a 1¼-inch space may get to one side, leaving a ⅜ space. Now, suppose bees get drowned in that ⅜ space; wouldn't it be well to put in a ¼-inch strip? "No sense in supposing that?" Now, look here; you never will be fair. I've just as good a right to suppose they'll drown in a ⅜ space as you have to suppose they'll drown in a 1¼ space. Suppose we don't suppose foolish things to take up room in either case. [No danger of bees drowning, when by a little squirming they can reach some solid object. If a bee gets out into the middle of a pan of syrup it will tire itself out, often, before it can reach the side of the pan; but if it is within an inch of the side, or of some object, it will very quickly get on terra firma.—ED.]

YOU HINT rather broadly, Mr. Editor, p. 59, that I ought to keep away from Colorado. Now, really, if I should settle down with my bees next door to Rauchfuss or some other nice fellow, do you think there would be any thing criminal in that? [Nothing criminal about it at all, but you would get into trouble all the same. I know of one bee-keeper who did that very thing by setting an apiary down near one of the yards of the Rauchfuss brothers. The latter simply made their yard up into powerful extracting colonies, and then brought in more bees. The result was, that the other fellow, who had come in to divide the profits with his little *eight-frame comb-honey* colonies, did not get much of a show. Those powerful jumbo colonies simply ran the little fellows out of business. If I am correct, the interloper moved away soon after, as he concluded there was not much honey in that locality.—ED.]

PICKINGS

FROM OUR NEIGHBORS' FIELDS.

BY "STENOG."

Our coldest month is very warm,
The air is full of fog;
The drizzly rain comes slowly down,
And next we'll hear the frog.

BEE-KEEPERS' REVIEW.

The issue for January is an excellent one. Mr. Hutchinson's remarks on buying a good camera are worth all his paper costs for a year. He devotes over a page to the new or proposed spelling, seeing little in it but a change, the trouble of which would not be offset by the very slight shortening of a few words, which, however, he says, is not phonetic spelling after all.

BRITISH BEE JOURNAL.

Concerning the preparation of honey for market, the editor points out some evils that are not unknown on this side of the ocean. He says:

> Numbers of bee-keepers—many of whom are men not short of common sense—utterly lack the simplest aptitude for preparing honey for sale. Careless to a degree, they will use old, soiled, and dirty sections for storing the new season's honey in, the very look of which would cause their rejection for use on any decent table. If sent by rail they are often packed so badly as to be irretrievably damaged in transit, and so on.

A view of John Brown's house and apiary in Cornwall is given. The house is made of stone, and what would be the "front porch" in this country is covered entirely with glass, making a pretty little greenhouse at the front door. That's a good idea, and I hope it will go "marching on." Perhaps a little diplomacy will enable us to show the picture itself.

◆

In regard to the folly of putting very poor honey on the market, the following is a case in point, copied from the leading editorial in the issue for Jan. 4:

> In 1898 the small crop secured was so deteriorated in quality by the general admixture of honey-dew that it would have been greatly to the advantage of the craft if the whole crop so damaged had been left with the bees and not forced on the market at all. Many bee-keepers, however, chose to put up their poor stuff for sale, and no doubt hundreds of buyers got a taste of British honey such as they will not forget in a hurry. This has probably told more heavily than many suppose in lessening the demand for table honey; and, in order to sell at all, prices have been brought down to a point low enough to cause much natural grumbling.

◆

Mr. J. E. Roden wanted some honey, and advertised for samples. His success is thus graphically described:

> The thinnest sample of all was in a bottle minus cork or stopper, but tied over with tissue paper, which on arrival was nothing more than pulp, of course. There were also several very thin glass bottles, which had been entrusted to the tender mercies of the post-office, wrapped in a sheet of ordinary paper only, with the stamps affixed to the parcel itself instead of to an attached label. The result of obliterating the said stamps had been to smash the bottles, thus producing a sticky mess of honey mixed with broken glass, torn paper, and bits of string, etc. And, with a few exceptions, many of the samples suffered from a regrettable lack of strict cleanliness, while others contained particles of foreign substances, and some had been so badly managed as to be in a state of active fermentation or worse.

What *can't* be mailed in England? Such packages in the United States would never be admitted to the mails.

◆

Is this the first year of the century? That is what agitates the British mind. Lord Kelvin says "time is counted from 0, and for the first 365 days we are progressing from zero to one year. The first century began with 0, and ended Dec. 31, 99." That is, if I owe 100 cents, payable a cent a day for 100 days, I make a payment of 0 cent, and stop at 99, and begin a new dollar with the 100th cent. Would Lord Kelvin call that a dollar? The era did not begin with the year 0 nor with any other. It was begun about A. D. 535 on the false assumption that Christ was born in the year 1, and we shall have to hold to that idea, although as a basis it should be 4 years earlier than it is. France calls this the last year of the century. When a year is counted it is a mere atom of time, having no beginning or ending. A child born Dec. 31, 1900, has seen *this* year as truly as one born Jan. 1.

Just here comes a German bee-paper called *Bienen-Vater*, and it speaks of being at the end of the century, but immediately adds, "Even though the 20th century should begin with 1901, *Bienen-Vater* means when one begins to *write* a new century, then it should be celebrated."

Further, the *Centralblatt*, of Hannover, says, "Two naughts. That is the end of the 19th century."

And here is the settler itself:

> *Ed. Chicago Tribune:*—The 20th century begins Jan. 1, 1901. It has been agreed to call the first year of the Christian era 1 and not 0. This was decided in Glasgow, April 15, 1870. W. H. M. CHRISTIE,
> Astronomer Royal.

◆

In the Isle of Man, in cutting a tree the woodsman was surprised to find an immense bees'-nest. As soon as a hole was made the bees poured out for two hours. Over 70 lbs. of honey was secured.

◆

British bee-keepers are bothered by a little bird called "tit." One bee-man placed strips of brown paper covered with bird-lime on the alighting board and caught two birds at once. By the way, how is bird-lime made?

There, now, after writing the above I find that David Ross, of Kansas, on p. 903 of this journal for 1887, tells all about it. I believe I will give the recipe next time.

LE RUCHER BELGE.

This superb French journal, for 1900, is printed on new type, heavy face, presenting a most beautiful appearance. For ten years it has been ably edited by Mr. A. Wathelet, at Liege, Belgium, and is fully up to the times.

CANADIAN BEE JOURNAL.

A far better and brand-new type is used now on the *Canadian Bee Journal;* the uncouth side-heads and border decorations have been discarded, and the whole journal presents the inviting appearance that might be expected from a Londonderry man. Mr. Craig and his readers are to be congratulated. Speaking of one kind of "honey dew," the editor says:

> Men have been rejected in considerable numbers who sought enrollment in the U. S. army, because they have what is called a "tobacco heart." There are many evil fruits which flow out of "small vices," unwisely adopted and needlessly continued.

VALUE OF BEES IN FRUIT-ORCHARDS.

New Light through the Efforts of Fruit-growers; the Effect of Cross-fertilization in Enlarging Fruit as well as Seeds.

BY J. E. CRANE.

It is not my object in this paper to thrash over old straw, but rather to gather some golden grains of truth from a harvest of facts that has ripened since the memorable discussion of this subject a few years ago, and gathered into a most interesting symposium.

Perhaps nothing in that symposium was more noticeable than the difference of honest opinion held by many intelligent observers, and for good reasons as the sequel will show. It is an interesting fact that the new light on this subject has come through the efforts of the fruit-growers rather than the bee-keeper, and that the solution of the problem is a most complete proof of the value of bees to the fruit-grower.

Before giving the new facts that have come to light on this subject I must tell how it came about.

Many years ago, down in Virginia, a farmer planted out a large pear-orchard. As he was a bright man he thought he would make a very profitable investment, and not plant any unproductive trees. As Bartlett pear-trees are almost universally known as the most productive as well as profitable, he planted his entire orchard of this variety. He cultivated his orchard with great care, fertilizers were applied, and when he looked for fruit he found "nothing but leaves." But he kept on until his means were exhausted and his place went under a mortgage. The new owner thought he had a bonanza in that pear-orchard, and he too cared for it until his ability to do so failed, when it passed into the hands of another person; but still it failed to yield a crop of fruit. I take it that the last owner had some faith in "book farming," for he sent to the Department of Agriculture at Washington for a solution of the problem of an unproductive orchard of Bartlett pears. Mr. M. B. Waite, of the Department, was sent down to study the subject on the ground. He guessed the trouble to be the lack of cross-pollination with other varieties, and, fortunately, he guessed right. More or less of the orchard was grafted with other varieties; but before it came into profitable bearing it was struck with "blight," and ruined. But it had served a useful purpose. A new interest was taken in the subject of the effects of self and cross pollination of fruit-blossoms, and the scientific study of the subject began. This was carried out by taking pear and apple blossoms just before they open, and removing a part of the blossom and then applying either pollen of the same variety or some other variety, and covering at once to prevent insects from interfering. In this way it could be told whether a given variety would prove fertile with its own pollen or not, and just the effects of crossing with other varieties.

As a result of these studies Mr. Waite says, "Many of the common varieties of pears require cross-pollination, being partially or wholly incapable of setting fruit when limited to their own pollen. Some varieties are capable of self-fertilization. Self-pollination takes place, no matter whether foreign pollen is present or not. The failure to fruit with self-pollination is due to sterility of the pollen, and not to mechanical causes, the impotency being due to lack of affinity between the pollen and ovules of the same variety."

"Varieties that are absolutely self-sterile may be perfectly cross-fertile. The normal typical fruits, and in most cases the largest and finest specimens from both the so-called "self-sterile" and "self-fertile" varieties, are crosses."

"Self-fecundated pears are deficient in seed, and the seeds produced are usually abortive. The crosses are well supplied with sound seeds."

He gathered most of the cross and self pollinated fruits resulting from most of his experiments for study and comparison, and found, as a rule, a decidedly better development of the blossom end of the fruits of those cross-pollinated than those self-pollinated. He found, also, a disposition or tendency in self-pollinated late varieties of pears to wither before ripening, while those resulting from crosses ripened perfectly. My son has offered to copy several of Mr. Waite's illustrations.

Fig. 1 shows a Bartlett pear crossed with pollen of Easter pear. No. 2 shows a self-pollinated Bartlett pear. No. 3 shows seeds under *a* from cross-pollinated Bartlett pears; under *b*, seeds from self-pollinated pears.

About three-fifths of the varieties of pears experimented upon appear to have been wholly self-sterile, or were greatly benefited by cross-pollination.

Even with those varieties capable of self-fecundation, the pollen of another variety is prepotent (more powerful); and unless the entrance of foreign pollen is prevented, the greater number of fruits will be effected with it.

As apples blossom soon after pears, a large amount of work was done with them to ascertain the effects of self and cross fertilization. He says, "In a general way the results were similar to those obtained in the experiments with pears. The division of the varieties into self-sterile and self-fertile sorts was not nearly so well marked.

"Crossing gave decidedly better results in all cases than self-pollination. The Baldwin, which was experimented upon freely, may be cited as a variety that comes as near being self-fertile as any, and yet even this is far from being entirely so; for in the best trees the percentage of fruit resulting from self-pollination was not more than a fourth of that which resulted from crossing. Some of the Baldwin trees, in fact, seemed to be self-sterile, and all the varieties occasionally set self-pollinated fruit."

He does not seem inclined to place much confidence in a strict classification, even of pears, as a variety may be quite self-sterile in one section, as in the North, and yet be quite self-fertile in the South or in some other season.

Among the sorts of pears he found more or less completely self-sterile are the Bartlett, Anjou, Boussock, Clairgeau, Clapp's Favorite, Sheldon, Louisa Bonne de Jersey, and other common varieties. Still less would it be possible to classify apples. A variety may be self-fertile this year and quite the reverse next year, or in one section of country and not in another. The weather at blooming time is important. He says, "The weather during the blooming period exerts both a direct and indirect influence on the setting of fruit. Even when not injured by frosts, the blossoms are often chilled by the cold to such an extent as to interfere with fecundation. Moderate cold renders the self-fertile trees self-sterile, and severe cold renders them sterile to cross-pollination as well. Warm and sunny weather at this time indirectly aids the fertilization by favoring insects in their work of cross-pollination."

The results of self-pollination in apples are very interesting. Again I quote from his paper: "The apples resulting from some of the experiments were collected and studied, and the results were found to be parallel with those obtained in the experiments with pears, the crosses being larger, more highly colored, and better supplied with seed. For example, *the hand-crossed Baldwin apples were highly colored, well matured, and contained abundant seeds*, while the self-fertilized *were only slightly colored, were but one-fourth to two-thirds the regular size, and seedless*. The crosses were, in other words, like the better specimens of apples not bagged from the same tree, and the self-fertilized fruits corresponded with the under-sized, poorly colored specimens from the same trees." The italics are my own, for I wished to call attention to the inferior quality of apples produced by self-pollination, rendering them of little value except for cider or swine.

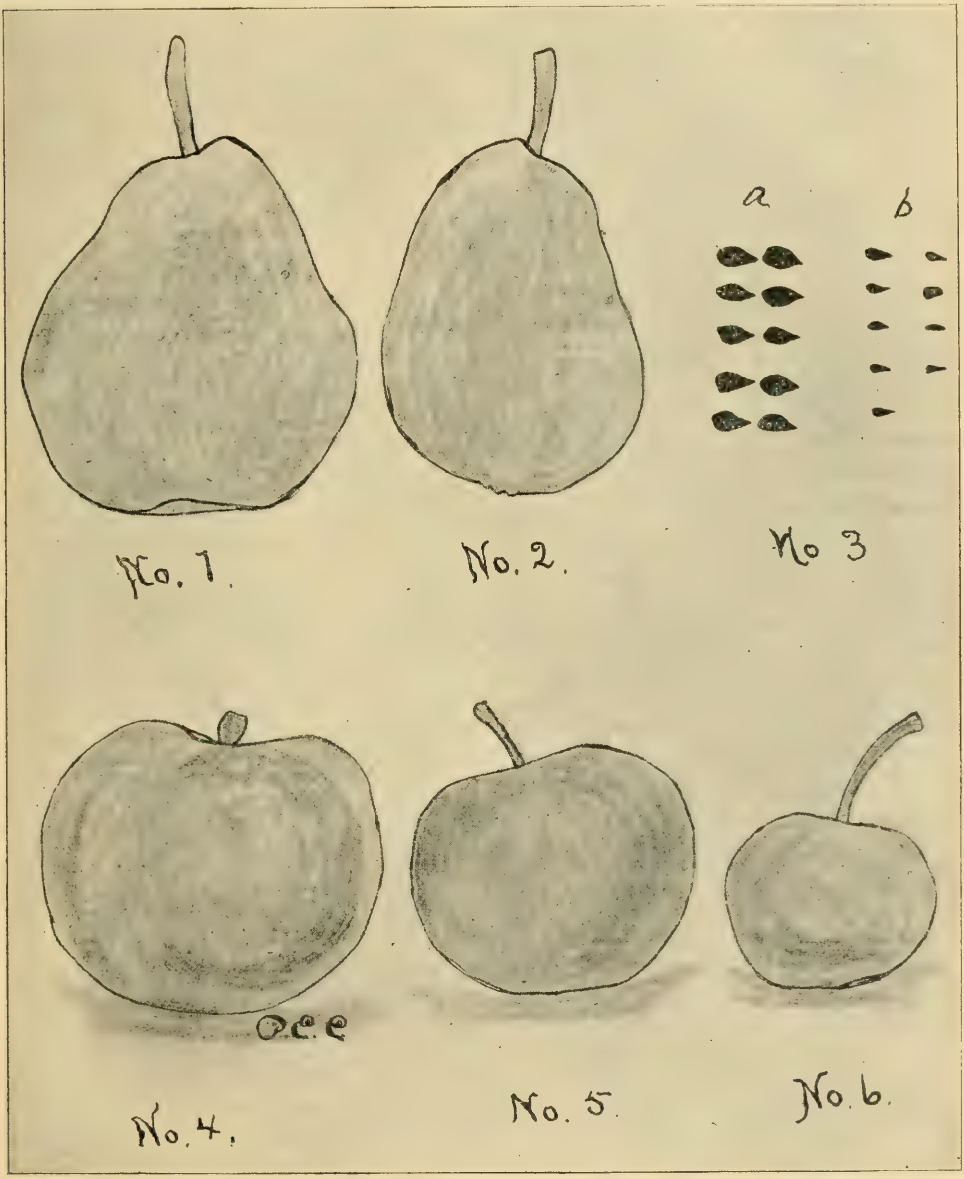

a
b
No. 1.
No. 2.
No 3
Oee
No. 4.
No. 5.
No. 6.

Fig. 4 of my illustrations shows a Baldwin apple crossed by pollen of the yellow Bellflower, while No. 5 shows a large specimen of Baldwin self-crossed, and No. 6 a small specimen of the same. The effects of cross-fertilization in increasing the size of fruits is an exceedingly interesting fact.

Prof. Munson, of the Maine Experiment Station, has found that the size of tomatoes may be quite dependent on the amount of pollen they receive while in bloom. One receiving a large amount may be four times as large as one receiving only a small quantity. We have, doubtless, all observed that a pea-pod that has set only one or two peas is greatly dwarfed in size. What the pod is to the pea, the skin and pulp are to the apple seeds. Facts prove, beyond the shadow of a doubt, that the cross-pollination of apples does affect not only the seed but the fruit also.

Prof. Waite gave considerable attention to the quince, but did not find so great a difference, and the fruits were as perfect and as abundent where self-fertilized as when crossed.

This is not as we should have expected, but we should be satisfied with the truth.

Prof. F. A. Waugh, of the Vermont Agricultural College, has been at work along this same line in a careful study of the numerous varieties of native and Japanese plums, and has found them, almost without exception, self-sterile here in the North.

In concluding his paper Mr. Waite says, "The number of insect visitors in any orchard determines to a great extent the amount of cross-pollination carried on. The pollen of the pear and apple is not produced in sufficient quantity, noris it of the right consistency, to be carried by the wind; and the pollination of these trees is, therefore, dependent on the activity of insects. . . . If there is no apiary in the neighborhood, therefore, each large orchardist should keep a number of hives of bees. Honey-bees and other members of the bee-family are the best workers in cross-pollination."

His advice to fruit-growers is to plant not more than three or four rows of any one variety together, unless the variety is known to be perfectly self fertile, and be sure there are enough bees in the neighborhood, or within two or three miles, to visit properly the blossoms, and, when possible, to favor the bees by planting in a sheltered situation, or by planting windbreaks.

I must confess a keen enjoyment in again taking up the study of this subject under the light that recent scientific investigation by careful, painstaking, and unprejudiced observers has thrown upon it. We can now see why there was such a variety of opinion on this subject in the symposium referred to. We find that, while some varieties of both apples and pears are, under favorable conditions, capable of self-fertilization, yet a majority of the various varieties of apples and pears are either wholly dependent on insect visits, or greatly benefited by them, in setting and maturing their fruits.

Should any wish to study this subject further, I would refer them to a paper by M. B. Waite, Assistant Pathologist, Division of Vegetable Physiology and Pathology, in the Yearbook of the Department of Agriculture for 1898, which I wish might be placed in the hands of every fruit-grower of the land. Prof. L. R. Jones, of the Vermont Agricultural College, informs me that Mr. Waite is quite conservative, and does not overestimate the value of bees in this connection.

Middlebury, Vt.

* * *

HARRINGTON'S MULBERRY APIARY.

Mulberry-trees for Windbreaks; a Pneumatic Wheelbarrow for Carrying Bees.

BY M. W. HARRINGTON.

I send a picture of my 100-colony apiary. As you can see, I keep my bees in straight rows, as I use a spring cart to carry the combs to the extractors in the honey-house. I also have 4×16-feet adjustable shades, or roofs (on post), over my bees. I have a double row of Russian mulberry-trees five feet back of the north row of bees, for a windbreak and shade, which gives me and family a lot of fruit as well as the birds. The birds take the mulberries in preference to the other and more valuable fruit.

By the way, the mulberry-tree makes the quickest and cheapest windbreak of any tree I know of.

In the picture your humble servant is looking over a comb of bees, resting it on the comb and tool carrying rack, with my observation hive just back of it, and a red cedar in the foreground.

I use a pneumatic and spring wheelbarrow to pick up (in row) and carry my bees clear into the repository in the cellar, so that the bees scarcely know that they are being handled at all, besides the perfect ease of carrying them. I have cellar space for only about 50 colonies or hives.

Williamsburg, Iowa.

[Pneumatic wheelbarrow—that is something new. I wish you had also sent us a photo and a description of it. It is not too late yet. Send us a picture that we may show it to our readers. Your apiary looks very inviting. It must be a pleasant place to work in.—ED.]

* * *

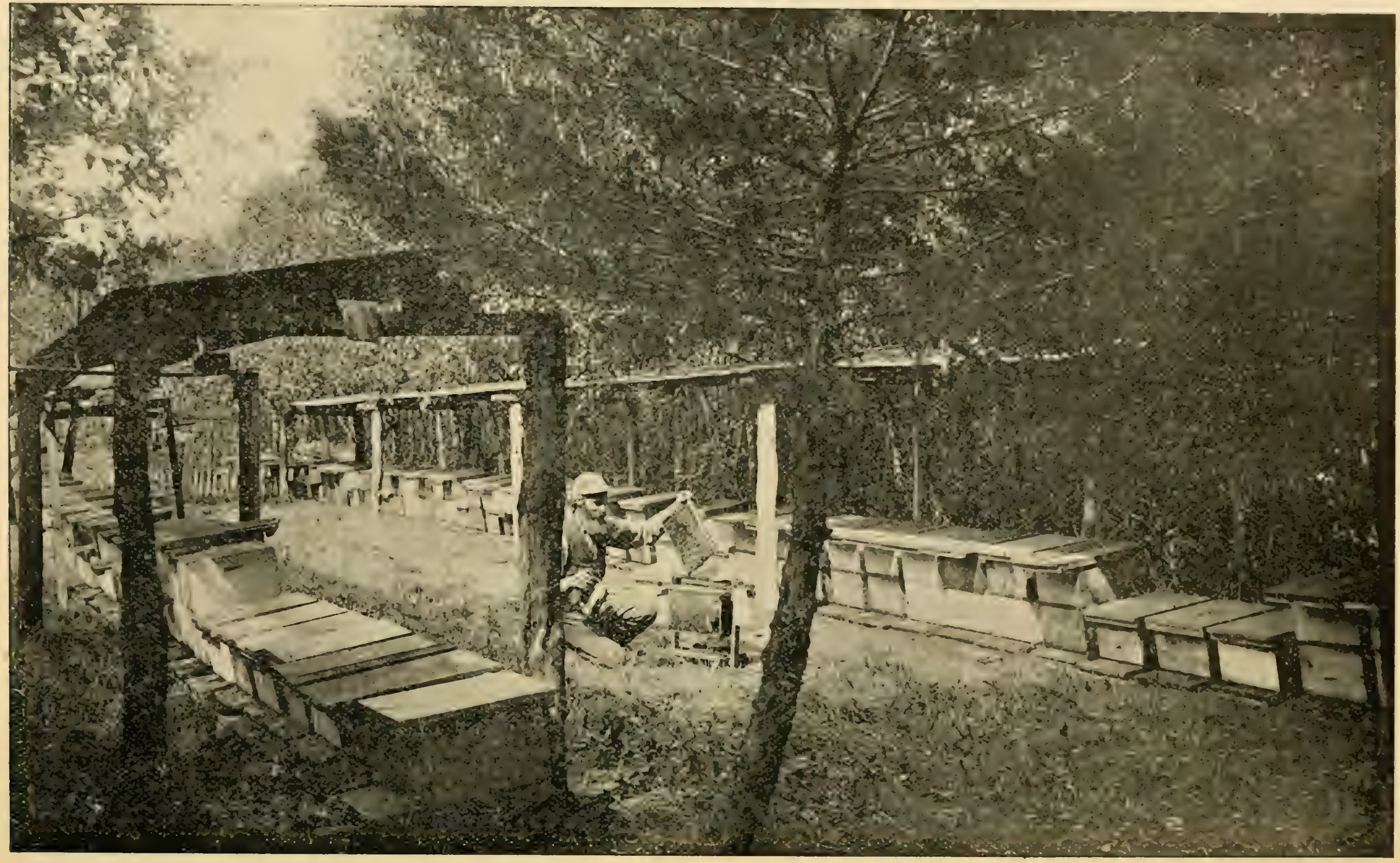
THE DIVISION-BOARD FEEDER.

Suggestions Concerning it; the Difference between Good Wax and Poor Wax; How to Refine Wax.

BY E. H. SCHAEFFLE.

In a recent number of GLEANINGS a feeder was illustrated for inside feeding. The idea is a good one, but I think it will be found a nuisance in this, that it will hold but a limited amount of honey unless it is given the space of two frames; and when you come to refill, it will be full of bees that will have to be driven out or drowned in the honey. Allow me to suggest that it be made of tin. Along the bottom on each side have a string of small holes, and outside of these a flange extending above and ¼ inch out from the feeder. On the bottom have a screw cap.

To fill the feeder, turn it upside down, fill through the screw cap, screw it down tight,



HARRINGTON'S MULBERRY APIARY, WILLIAMSBURG, IOWA.

and then reverse the feeder; this will make an atmospheric feeder that will feed itself as long as there is any honey in the feeder, and will not be full of bees; then, too, it will hold a good quantity of honey.

My honey crop figures up a little over 3000 pounds—not bad for a "bad season." I shipped it to San Francisco, and realized 7½ cts. Beeswax, 53 lbs., sold for 26 cts. Why is it that there is but two cents' difference between the poorest and best wax? One season a bee-keeper brought me his wax and requested me to ship it with mine. I placed it in the solar wax-extractor. When it was all melted there remained a spongy mass of black filth. I then melted the wax, and, to my surprise, found it would not leave the can. Mine always separates from the sides. I was compelled to cut the can apart to get it out. Now, after this recleaning it was still a dingy-looking mess, so I shipped it by itself and stated that it came from another party. My wax was as bright and clean as it is possible to make it; yet when I received my returns the two lots brought the same price. I am satisfied that the dirty wax was largely suet. A poor article of wax should not bring over 20 cts., while a No. 1 article should at all times command 30.

I have been looking for that honey-leaflet for months past. I inclose a recipe for it, provided it passes Mrs. Root's inspection.

HONEY AND ALMOND CAKE.

Boil one pound of honey. After it has boiled, and while still hot, stir in one pound of flour, ¼ pound of coarsely chopped almonds, browned in ¼ pound of sugar (heat the sugar *without water;* when it has melted stir in the nuts; allow it to cool, and then separate the nuts so they will mix well). Add one teaspoonful of ground cinnamon, ½ teaspoonful of ground cloves, a handful of chopped citron, and a scant teaspoonful of soda dissolved in a little water. Mix well, spread on a floured tin, and bake. While still warm cut into squares.

Murphy's, Cal.

[There would be a difficulty in making the division-board feeder take the place of two frames, for the reason that the bees would be very likely to go inside, build comb, and fill the same with syrup right direct from the feeder. Indeed, they did do that to a limited extent, even with the feeders that were only 1¼ inches wide inside. To increase the width would make the temptation all the greater.

In practice we find it better to use two such feeders, one on each side of the brood nest, when we desire to increase the quantity fed at a time. When, however, we wish to give the bees at least ten or twenty pounds at one feed for winter, then we use the Miller.

A division-board feeder made of tin on the plan you describe would no doubt work; but after considerable feeding, year after year, we have come to the conclusion that feeders of *metal* are too cold for the bees. When constructed of wood, the bees will take the syrup when they would not go near the same feeder if it is made of tin. This idea of "metallic coldness" would have very little weight with you in your climate; but for most localities it would mean much.

So you do not understand why there should be so little difference in the quotations of the very best and the medium grades of wax. We make a difference of 2 cents, sometimes 3, when the wax is of extra quality or of very poor quality. That is to say, the poor quality might bring 24 cts., and the very best would bring 27. If it is pure beeswax, the medium grades are worth to us within 2 cents as much as the very best, because with our processes of refining it does not cost us more than 2 cts. to bring the medium grades, and even the dirty grades, up to the very best, even counting out the very slight amount of dross that is left after refining. But this dross is by no means wasted; for after a second refining, using more acid, more wax still can be taken out, and the last remnant consigned to the solar wax-extractor, to be treated to a gentle heat for several days. After that it may have to be subjected to the wax-press. But whatever we can get out of this dross or "slumgum," as we sometimes call it, it is just so much clear gain.

We have no secret process of refining, for our wax-room is open to inspection to any bee-keeper. We simply have a large wooden tank capable of holding about ten barrels. Into this is poured about a barrel and a half of water, acidulated with about two per cent of raw commercial sulphuric acid. The hogshead—for that in reality is what it is—is then filled with commercial wax of all shades and colors, and the whole is then treated to a jet of steam. After it is thoroughly melted the pipe is withdrawn, the tank is covered, and allowed to stand over night. The next morning the wax is ready to draw off through faucets located at different heights on the tank. During the night the acid and water, by reason of their greater specific gravity, settle down out of the wax, leaving it on top; during the same time the dirt now free from the wax settles into the water. The wax is then drawn off into deep cans, and usually has a bright yellow color, so totally unlike the product that went into the hogshead that one could hardly realize the two are one and the same.

Of course, it is impracticable for the average bee keeper to use so large a hogshead; but he can use practically the same methods with an ordinary barrel, reducing the quantity of acid and water, but, of course, keeping the relative amount of acid the same.

The quantity of acid in any case will depend largely on the color of the wax before it goes into the refining-vat. If the whole batch is almost black, then we would use about 5 per cent of acid to water. If some of it is black, some yellow, some brown, then we would use about the per cent first named.—ED.]

J. A J, Del.—If you have combs of sealed honey, by all means give these to the bees that are short rather than to feed bees sugar syrup at this time of the year. Indeed, I may say as a rule that, when we have combs of sealed stores, and plenty of them, it would be folly to undertake the expense of feeding.

ANSWERS TO SEASONABLE QUESTIONS

BY G. M. DOOLITTLE

WINTERING BEES.

Question.—Having read what you have to say on cellar wintering, found in the January 1st GLEANINGS, I should like to have you tell us something more about wintering bees in general, not confining your remarks exclusively to cellar wintering, as very many of us winter our bees out on their summer stands. Give us something practical on general wintering as soon as possible. From a beginner.

Answer.—If the writer of the above question will turn to page 19 of January 1st GLEANINGS, he will find the editor saying, near the middle of the second column: "Say as much as we like, cold is the principal agent that causes dysentery," and dysentery, or "bee diarrhea," as it is generally termed, is the chief cause of our winter losses. Then we find the editor saying that "an apiary badly attacked with dysentery will be cured just as soon as warm weather sets in." Now, while I do not just agree with this last statement, it is not my object to attack that statement here; but by putting the "cold" and the "warm" together, say that the *why* "*cold* is the *principal* agent," comes from the fact that the cold *confines* the bees to their hives; and where this cold (therefore confinement) is long continued, the result is bee diarrhea; and I go on record as saying that *no* colony of bees could ever live to breed up again where cold in varying degrees continues long enough to keep the bees fully confined to their hives for eight successive months, no matter how good the food, how dry the air, nor how nearly perfect might be all other conditions.

But now more nearly to the question of our correspondent. And to best tell him what he wishes to know, I will give, as nearly as I can, a conversation which passed between a neighboring bee-keeper and myself a short time ago. After passing the usual salutations, and remarking about the weather, etc., as nearly all do when meeting, he asked, "About how much honey does a colony of bees consume during the winter?"

I replied, as nearly as I can remember: "When bees remain in that quiescent state which is required for safe wintering, a pound of honey a month suffices the whole colony; and in this state a colony would pass from four to six months with ease, according to their surroundings; but if the colony becomes uneasy from any cause, the bees will eat from five to seven pounds a month, and soil their hives and themselves so as to cause their loss in from six weeks to two months from the time they commence to eat so voraciously."

"But is there no way to prevent their eating so much?"

"To help to control this appetite, cellar wintering has proven about the best plan in cold climates, because, from the even temperature maintained, the bees need but little food to keep up the necessary warmth they require during this period of partial inactivity which our northern winters compel them to pass through. As but little food is required, the body of the bee easily contains said food after digestion, and thus all goes well."

"But must all winter in the cellar?"

"No. Next to the cellar comes chaff-packed hives, because, as the bees are surrounded by porous walls, which take off the moisture passing from the bees' bodies, also retaining the warmth generated by themselves, they are kept at a more uniform temperature than they would be without chaff packing. This lessens the consumption of honey, and enables them better to throw off a part of the moisture contained in their food, and to contain the rest till the weather shall be sufficiently warm for them to fly."

"By thus allowing the bees to fly occasionally, is not this better than cellar wintering?"

"This mode has a seeming advantage over cellar wintering, in that it allows the bees to fly if an opportunity permits, during the winter; but it is offset by a more uniform temperature in the cellar, and consequent decrease in the consumption of stores."

"Are there not other plans?"

"These two plans are about the only feasible ones, and are those used by our most practical apiarists."

"Is there any thing which helps or hinders these plans being a success?"

"Yes, there are other causes which help these plans to be a success or failure?"

"What about those looking toward a failure?"

"Those which look toward a failure are these: First, poor honey, such as honey-dew; the juice from decayed fruit, soured and unsealed stores, etc., because the bees have to take into their bodies an excess of that which is not *real* food to them to sustain their existence, thereby extending their bodies; and unless a chance to fly presents itself often, they must die."

"Any thing else looking toward a failure?"

"Yes, all causes which disturb them in their winter repose; because, as soon as they are disturbed, they take into their bodies more food than is required for their existence, thus placing them (with the best of food) in the same condition, or nearly so, they would be with poor honey."

"Then quietness is one requisite?"

"Yes; all should know how important it is that bees should have perfect quiet, that no mice or rats be allowed in or on the hives, and in cellar wintering that the temperature does not get so high or low that it makes them uneasy."

"Is that all looking toward a failure?"

"No; but few bees, or mostly old ones, tends greatly to failure, because, if but few bees, they can not keep up the desired warmth without consuming an undue quantity of food, thus thwarting the object we are seeking after; and if old bees, they will die of old age before the young ones in sufficient numbers hatch the next spring, thus causing what is known as spring dwindling."

"What are those looking toward success?"

"Those looking toward success are these: That those on the summer stands have a fly once in six or eight weeks; that each hive contain an abundance of bees (if not in this way, in the fall unite till they are); that they have plenty of good sealed honey, or sugar syrup, made of the best granulated sugar, a good queen, a hive so that the bees can cluster compactly, etc., because all of these things have a tendency to accomplish our object of keeping the bees in such a state of quietude that they can contain their excrement for a great length of time, for upon this hangs *all* the secret of successful wintering."

"But bees seem to die more rapidly when we have loss in the spring, from the middle of March till fruit-bloom, with purifying flights from once in two weeks to every day. How do you account for this?"

"Even so. This has been noticed by many apiarists. The reason is this: Their vitality was so impaired by the strain brought to bear on them, consequent upon their holding their feces four or five months during the cold of the winter, that they spring dwindled, or, in other words, they died of premature old age, as that which causes violent exercise of any kind shortens the life of the bee very fast; hence we have bees living only six weeks during June, July, and August, while those emerging from their cells in September and October live from six to eight months if they keep in that quiet state they should to winter perfectly."

"Well, I am glad I could have this talk with you, for in it ideas have been advanced which are well worth thinking of, and which, if practiced, will help solve the wintering problem."

If the above conversation does not cover the whole ground our correspondent wished, let him come again, specifying more minutely what he wants.

HEADS OF GRAIN FROM DIFFERENT FIELDS

[I solicit questions for this department; but they must be put on separate slips of paper, and marked "GLEANINGS Department." If you desire an immediate answer, say so at the time of writing, and a private reply will be sent you in advance before your question with answer appears in these columns; but questions that are mixed up with business matters will not only be subject to considerable delay, but possibly will receive no answer at all.—EDITOR.]

WHY ONE COLONY GATHERS DARK HONEY AND ANOTHER WHITE.

Will you please tell me from what blossoms bees get the white honey? We have in our apiary one colony that, this last season, produced white honey of a delicate flavor, while another colony having the same conditions of time, range, and choice of flowers, gathered only amber honey of rather strong flavor. I suppose the difference is that the first is a better breed, coming from a good Italian queen, and that they have a more "esthetic taste" (if such a term might be used in this connection), else how can it be explained? Would such a bee go to more trouble to get a certain quality of nectar than another?

Auburn, Cal. N. V. HALL.

[This is a question that I can hardly answer. I know this: That black bees are more inclined to work on buckwheat, and Italians on clover. On my trips through New York I found evidences where blacks or hybrids would show partiality for buckwheat, and pure Italians to clover or basswood. Why this is so, I can not say.

You do not say whether the bees in the one case were Italians and the others blacks; but certain it is that the dark honey referred to must have come from some other source than that of the white, for the mere difference in the bees would not affect the honey.

It is possible that individual colonies have individual tastes like individual bee-keepers. For instance, some of the York Staters prefer, even up, buckwheat to the best clover or basswood; and once in a great while we have a customer who comes in and calls for buckwheat—does not want any thing else.—ED.]

THE DRAPER JUMBO HIVE.

1. What are the practical results of the 10-frame Dovetailed hive with that extra 2¼ inches in depth?

2. Will it be necessary to use the queen-excluder with those deep frames, in running for extracted honey? I should like to see the report of those who have used them this season.

River Falls, Wis. A. D. SHEPARD.

[1. In some localities these large deep hives seem to give better results than the smaller ones. A good deal depends on whether comb or extracted honey is sought. I can only suggest that you try a few of them in your locality; and if the few, after two or three seasons' use, seem to give better results than your regular standard Langstroth, then you would be safe in purchasing more of those Jumbos.

2. This is a question that I can hardly answer. I should say, however, that it would not be as necessary to have perforated zinc on these large brood-chambers as on the smaller ones. Mr. A. N. Draper, of Upper Alton, Ill., who has had large experience with these big hives, is especially requested to give these questions further consideration.—ED.]

DRYING SMOKER WOOD WITH A COLD-FRAME.

I should like to say a few words in regard to fuel for smokers. As I live on a farm I find rotten wood the most convenient to use; but until last summer I was often bothered to get it to burn readily. Mr. R. L. Taylor says in the *Review* for September, "Fuel, if pieces of wood, should be kept under cover for two or three years, in a dry place," etc.; and Mr. Greiner says in last GLEANINGS, rotten wood may be dried sufficiently inside of two or three weeks, by exposing to wind and sunshine, if taken indoors every night.

Last spring I hit upon the following plan which I think away ahead of either. I took a small cold-frame, set it in the apiary, with a good slant to the sun; put in some boards for bottom; set in some pans of rotten wood, and put on the sash. In a short time I had some fuel as dry as need be. By this plan it dries when the sun shines, and is kept dry at night with no watching.

Of course, as the dry is used out it should be replaced with more to be dried. If one could afford it, one of those Boardman wax-extractors would be just the thing.

Salem, N. Y. EARL Y. SAFFORD.

DOOLITTLE FEEDER.

On page 895 of GLEANINGS you describe the Doolittle division-board feeder. Does not this feeder drown the bees? There seems to be nothing about it to prevent this; and in pouring in the syrup, wouldn't there be a number of bees in the bottom that would be covered? I should think it would be an improvement to have the hole near the end of the top-bar. Cloth would not have to be pushed back so far. JOHN F. HENNESSY.

Ballston Spa, N. Y., Dec. 14.

[There is no danger of the bees drowning in a feeder like the Doolittle. The sides of the feeder are so close to each other that the bees can easily reach the sides and crawl out in case they should fall into the feeder. The majority of hives have the quilts running the other way; but, of course, in making the feeders one can bore the holes near the end. This is the very best small feeder I know of.—ED.]

REFORMED SPELLING WITH A VENGEANCE.

There has been much in the journals lately on the subject of reformed spelling. I am sorry that Dr. Miller seems to be somewhat opposed to it, for, though it will be like parting from an old and esteemed friend for me to adopt any other method of spelling phthisic, beaux, etc., yet I believe it will save much wear and tear on the coming generation to leave out some of the superfluous letters. By the way, I should like to ask if Dr. Miller, Mr. A. I. Root, Mr. York, or any of the other brethren, have ever eaten any ghoughphtheightteeaux. If not, I should like to have the pleasure of cooking some for them if they will make us a visit. MRS. R. C. AIKIN.

Loveland, Col., Nov. 23.

[Well, now, Mrs. Aikin, I did call upon you, but you did not give me even a taste of ghough—shades of the reformed spellers! My, oh my! I can not pronounce it, much less spell it offhand. On paper it looks as though it might be something tremendous.—ED.]

PLAIN SECTIONS INDORSED.

Plain sections and fences are the thing, and will forge to the front. I produced as well-filled sections this year as possible, having several cases filled and capped to the wood of the sections. I raised my first lot of queens by the Doolittle method. They were all fine large ones.

I have 84 colonies at present, and look for better wintering than last year, and a better honey crop also, though I did fairly well on sweet clover and aster last year, having harvested one ton from 57, spring count, some being mere nuclei from severe winter, and many having worthless queens, which I have learned to replace. R. C. HUGENTOBLER.

Miami, Ohio.

NIVER ON GLUED SECTIONS; HOW TO TEST THE STRENGTH OF SECTIONS.

A little matter in GLEANINGS (Holtermann's article, p. 924) attracted my attention. How is he going to put up four-piece sections with the foundation put on to the top piece before ramming them together? By the way, I had some experience with the one-piece stuck-together-without-glue section last fall, and my opinion is that I prefer a section to hold honey—not honey-to-hold-section affair. A thought struck me right here, how to test the strength of a section. I cut the comb out of one, tied a string through one corner, and hooked the spring balance through it; tied another string to a basket and through the opposite diagonal corner of the section, then put in coal until the weight pulled the section to pieces. That section was dovetailed at the corners only 1¼ inches wide, but it took 4½ pounds of basket and coal to do the trick. S. A. NIVER.

Groton, N. Y., Jan. 8.

MICE IN HIVES.

I got three hives of bees late in the fall, and there is something cutting the combs in small pieces. Can you tell me what it is, and a preventive for it? Could I rehive them this winter? T. W. VAUGHAN.

Kittanning Point, Penn., Dec. 28, 1899.

[From what you say above I should be inclined to believe that mice were getting into your hives, for they do make sad havoc in the colonies. The entrance should be narrow enough to just admit bees; or if 2 inches deep, coarse wire cloth should be tacked over. Wire cloth should be just coarse enough to let bees pass through it, and yet keep out the "varmints."

The mice, being fond of the combs and honey, seem to take special delight in burrowing up into the packing and getting the benefit of the warmth of the clusters. Like some folks they like soft warm quarters with plenty to eat.—ED.]

LYE FOR CLEANING SEPARATORS.

Dr. Miller:—You made the statement in GLEANINGS some time ago that you were using lye to clean separators. Do you still use it? does it give satisfaction? or does it roughen or eat the wood? I want to use plain sections and fences; but cleaning the fences by hand is a serious matter. Do you think they can be properly cleaned by the lye plan?

Ono, Wis., Nov. 30. W. H. YOUNG.

[Dr. Miller replies:]

I think just as much as ever of concentrated lye for cleaning T tins, and I think it would be excellent for tin separators, but I never tried cleaning *wood* separators with it. I tried it for cleaning supers, but didn't like it. I am sure it would not do to clean fence separators with it, for they are put together with glue, and when you put them in the boiling lye they would be ruined. I have not had enough experience cleaning fences to find an easy way to clean them, but my former faith that they could be as easily cleaned as plain separators has all oozed away. [But those who have tried both *extensively* say they are easier.—ED.]

WHAT TO DO WITH CANDIED COMB HONEY.

I have some beeswax on hand, and I intended to get the wax from my 30 hives and ship all to you; but I ran against trouble. The combs, being old and dark-colored, don't sell well; so I can hardly sell it in the comb; and when I tried to get the honey out of the combs I struck another snag, and a serious one to me. It is this: About a quarter or more of all the cells are filled full, or nearly full, of candied honey. I have tried every plan I can think of, and so far I have failed to get the honey out. If you know of any way to get this honey out, please let me know.

Cross Keys, Ga. JOHN BARFORD.

[The best use you can make of these combs filled with honey candied solid is to put them into the solar wax-extractor next summer. The honey and wax will both be reduced to the liquid form — the former being separated off in a cake by itself. While the honey is not of as good quality as that which has been taken with the centrifugal extractor, yet it will do very well. If there is another and better way of treating such combs I should be glad to be informed of it. Bees will sometimes take candied honey out of the combs and use it; but more often they will drop the granules on the bottom-board; and when warm weather sets in, these granules will be shoved out of the entrance. After the first rain these will be wet down, resulting in more or less robbing; so that I recommend that combs containing candied honey be treated as I have explained.—ED.]

A GOOD RECORD; OVER $960 FROM ONE APIARY.

I started in the spring with 60 stands strong, and 20 weak. I increased to 150 stands. I have sold $715 worth of extracted honey and 150 lbs. of wax. My 70 stands of bees at $3 00 net brought $210; 150 lbs. wax at 23 cts., $34.50; extracted honey, $715. Total, $959.50. Have you a better report than this from 80 colonies?

THOS. M. SKELTON.

Fresno, Cal., Nov. 23.

COLOR OF HONEY-DEW FROM HICKORY.

What is the color and quality of honey-dew from hickory? E. D. HOWELL.

New Hampton, N. Y.

[I can not be very positive, but my opinion is it is very dark in color and rank in flavor. In fact, that might be said of almost any honey-dew; but that from hickory is particularly bad.—ED.]

PLAIN SECTIONS AND BEEWAY SECTIONS COMPARED.

The fence and plain section please me very well. I had a few cases of sections with insets; and when these were filled the boxes looked well and the honey tempting; but when I went and got the plain boxes that were equally well filled with honey, and set them down beside them, I did not have any hesitation as to my choice, which is the plain-section honey-box.

Cuba, Kansas. WM. H. EAGERTY.

TRANSFERRING BY THE HEDDON METHOD.

Mr. James Heddon says, regarding his method of transferring, that in 21 days he makes a second drive and cleans the hive of bees. If he puts the second drive with the first, won't they fight after so long a time?

Melvin Mills, N. H. F. C. BURNHAM.

[It will be very seldom that bees will fight at the second drive. If they do, give them a little smoke and all will go well.—ED.]

CHUNK HONEY; INCREASING DEMAND FOR IT IN THE SOUTH.

You are aware of the fact that comb honey in tin cans is rapidly coming in demand everywhere, and especially so in the South. We have demonstrated that fact the past season, for our orders for honey from local dealers over the State are over five times as much for chunk honey as for one pound sections. We will run at least half of our bees this year for chunk honey. O. P. HYDE.

Hutto, Tex., Jan. 1, 1900.

HONEY THREE MEALS A DAY AND BETWEEN MEALS.

I enjoyed the illustration of the "Cincinnati house-top apiary," page 678. It is neat and regular; also "pineapples," page 685. Speaking of honey for breakfast, page 726, I would say it is a very common custom here to eat honey three meals a day—at least among bee-keepers. At our home it is eaten at each meal, and between meals when we have it.

The last few numbers of GLEANINGS are simply fine—such good illustrations. I am glad your subscription is booming.

W. W. LAWRANCE.

Centreville, Tex., Dec. 8.

THE WIRE-CAGE METHOD OF INTRODUCING QUEENS.

In regard to the wire-cage plan of introducing queens, as referred to on page 857 as being a good and reasonably safe one, I heartily agree, yet I think I once lost a queen by that method. The queen had laid a number of eggs in the cells from which the young bees had emerged. When she was released she was accepted with gladness; but having occasion a few days afterward to open the hive I found queen-cells started from the patch of eggs laid under the wire cage, and the queen dead. Since then I close the wire cage, after the queen is released, and leave it so for a few days so they can not have access to the eggs.

J. W. SOUTHWOOD.

Monument City, Ind.

AN INTERESTING REPORT FROM BRITISH GUIANA, SOUTH AMERICA.

You will be glad to hear that I have extracted from my little apiary 300 lbs. of honey from 8 hives only, one alone giving me 48 lbs. net. That is for five months' work from the previous lot I extracted. We are the only ones in this colony having an apiary. This is my second year. I shall always make some sort of report for you. W. H. TERRIL.

Georgetown, British Guiana.

SEALED COVERS FOR WINTER.

Give me sealed wood covers for bees in preference to cloth or cushions; also have the bees face the south in preference to any other direction this side of the equator, because they will often make a fly in the afternoon if they face the sun, while if the sun shines on the back of the hive they will not fly. This is for winter. HERBERT L. MCLALLEN.

Trumansburg, N. Y., Nov. 4.

STUNG TO DEATH BY BEES.

[We copy the following from a Cleveland daily, under date of Sept. 27. The same incident was referred to in Pickings, on page 791, last year, but we have here a little more additional information:]

ALLIANCE, O., Sept. 26.—John Carson, a farmer, aged 65, of Newton Falls, was stung to death by bees. Carson desired to work in his apiary, and, to quiet the bees, burned sulphur. This only enraged the bees, however, and they swarmed over him, stinging him in hundreds of places He made his way to the house, where he fell to the floor. Several hours later he died.

[This man lost his life by not knowing enough to let bees alone when they should not be handled; and instead of using smoke to quiet his bees, as bee-keepers do the world over, he did something entirely unheard of. Who ever heard of burning sulphur to quiet bees? We are very sorry indeed to learn that anybody has lost his life in this way; but he certainly was entirely to blame in stirring up the bees at a time when they should have been let alone, and also in attempting to handle them when he did not even know any thing about the management of bees.—ED]

WHAT TO DO WITH THE COMBS OF SEALED STORES OF A COLONY THAT HAS DIED.

One of my colonies was too weak to go into winter quarters before I was aware of it, and the cold snap, 10° below zero, we had about the holidays, killed all of them, and there is quite a lot of sealed honey in the brood-chamber—about 10 or 15 lbs. I closed the entrance so no robber bees could get in. What would you do with that hive? Would you get a colony of Italians and put in next spring, or what? E. S. KRIEBEL.

Reddick, Ill.

[I would close the entrance up in such a colony, after cleaning out all dead bees. Next spring give these combs to some colony needing stores; or if there is no colony that is short, reserve the hive and its combs for the first swarm that can be hived on its combs. Combs off from which the bees have died will be, as a general rule, unless badly smeared with dysentery-marks, just as good for a new colony as any.—ED]

BEGINNERS' QUESTION-BOX

BY E. R. ROOT.

C. W., N. Y.—We made plain sections 4¼ × 5 × 1¼ all last season, but we did not catalog them, for the reason that the demand was comparatively limited. You will find them very highly spoken of, however, by two or three of the late correspondents of GLEANINGS. They have all the advantages you name, and may possibly displace the 3⅝×5.

K. M., Ohio.—I know of no reason why bees can not be kept within the city limits; but to avoid any trouble the hives should be put in the back yard of the city lot; or if there is no such yard, on the roof of the building. You should arrange somehow to get the range of flight of the bees so that it will not interfere with the ordinary traffic of the streets.

W. J. M., Pa.—The bees which deserted their own hive and entered another were not robbers, as you suppose, but simply bees that had swarmed out. The bees of the hive entered regarded them as intruders, and fought them just as they would fight robbers. The occurrence is not unusual; but when it does happen, the bees fight very much as if it were a case of robbing. In this case the fighting was mostly on the side of the colony invaded, for the incomers would treat the others civilly enough if they could only gain admittance.

E. J. B., Can.—We could not very well refer you to the particular copy or copies of GLEANINGS giving the Elwood caged-queen plan to prevent swarming, without spending probably a day to look over our back volumes. This expense you would not care to assume, probably; but in our A B C of Bee Culture you will find this matter pretty well covered under the head of "Prevention of Swarming," and particularly under the heading "Prevention of Swarming by Caging or Removal of Queen." Under this heading you will find all the information you desire.

A. W. C., Mo.—There are several ways of rendering old black combs into wax for market. Perhaps the most convenient is the solar wax-extractor, which can be had of any of the dealers in supplies. Another and very common way is to put the combs in a cheese-cloth bag and then sink the bag into a wash-boiler of hot water. As the wax melts it will percolate through the cheese-cloth sacking, rise to the surface of the water, and can then be dipped off. The bag should be occasionally punched with a stick, and squeezed, to press out as much as possible of the wax that remains in the old comb. But there is no way of getting *all* the wax out of old combs except by the use of the wax-press. First render the combs in a solar wax-extractor, or by the other method described, after which, while hot, subject them to pressure in a wax-press. For directions for making a wax-press, see our A B C of Bee Culture.

C. B. P., Mich.—You can not very well winter bees under the schoolhouse, on account of too much heat and too much light. The room should be almost absolutely dark, and should have a temperature that does not vary very much above 50 nor below 40; 45 is a desirable point to hold it at. The noise of the children in the rooms above would not disturb the bees after the latter have become a little accustomed to it, as bees are wintered right along year after year in cellars under a floor frequented by romping children ; but the steam-pipes and the large amount of light in the schoolhouse basement would be very objectionable. You might get along very well providing you could give the colonies access to the open air by means of entrance-ways just under the windows.

J. S. W., Ia.—I should hesitate to advise you to go to Colorado to keep bees, as the State now has all the bee-keepers it can support to any advantage. Only one-tenth of the whole area is under cultivation, and on only a part of that can bees be kept. Rocky Ford, however, is a good bee country, and you could possibly find a location. I would not advise you to move unless you think it is necessary for your health. There are a good many drawbacks in the State, and I would advise you to wait until you have read all the series of articles that I am to write for our journal. I hardly think it would pay you to move your bees, on account of freight. I would suggest that you do this : You and your boy go out to Colorado, hire out to some bee-keeper, or manage bees on shares for a season ; leave your wife at home, and then after you have been there a summer, and know something of the conditions, you can make arrangements to move your whole family, and sell out if it should seem best. By this arrangement your son will have the benefit of the climate for one summer at least, and it may be enough to give him a start on the road to good health, even if you should decide that you had had enough of it in one season. Colorado isn't a good country for nervous troubles. In the regions of irrigation, lakes, and ditches, consumptives sometimes get worse instead of better, for there is a good deal of moisture in those vicinities. The best place for a consumptive in Colorado is out in the dry air away from irrigation. Such localities are practically in the desert, away from moisture as far as possible, and are decidedly lonely.

R. C., Ohio.—The ten-frame Dovetailed hive you will find is just the right dimensions without the follower to accommodate ten frames. In a few cases the bees bulge the outside surfaces of the combs in the two outside frames ; but they would do that with the eight-frame hive with the follower. In either case, after all the frames are in the hive the whole set must be crowded close together and then spaced to the center of the hive so that the space between the outside surfaces of the combs will be equal. If you do this in practice you will not experience the trouble you fear. The new hive-follower for 1900 will be very much better than that for 1899, and will carry out in theory as well as practice the very object we desire to secure in facilitating the removal of the frames ; but even then it is an extra expense, and about as difficult to remove as any one frame. To take out the first frame, shove the whole set over as far as they will go to one side. Then split the set at a point next to the one you desire to take out, separating the two parts as far as possible. Then shove the desired frame into the middle of the space thus formed, and you will find that it will come out without difficulty. With regard to the advisability of using single-walled or chaff hives for wintering purposes for Southern Ohio, I should be inclined to think that Chas. F. Muth was right ; but a short and very cold spell down to 30 degrees below zero is not nearly so destructive to bees' life as long-continued chilly weather in March and April. If in your locality the bees can fly almost any day in April—that is to say, if they can gather pollen during the fore part of that month and the latter part of March, then we should say that the chaff hive would be a superfluous expense. We have not kept data in regard to morning temperatures in our locality for the last 30 days. We have had very variable weather, ranging from 10 above to 50 or 60 above. From before Christmas till four or five days after Jan. 1st the temperature ranged from 10 degrees with high winds. This would be worse than 10 or 20 below without wind. Possibly by applying to the Government Bureau you could get ranges of temperature for any date for the two localities. Referring to a cheap binder for GLEANINGS, I would say that we have something that we could supply you for 15 cts., postpaid, that is very neat and pretty. It has been advertised but very little, but it is not as handy nor as good, of course, as our more expensive binders.

Igremento - Presto - Change!.

RAMBLER BECOMES A MIND-READER.
(A dream of our artist.)

EDITORIAL

BY E. R. ROOT

EXTREMES OF TEMPERATURE FOR WINTERING.

FOR the last two or three weeks we have been having very open weather. The temperature here has been ranging from 50 almost up to 70. I fear these very warm spells for outdoor bees, almost as much as I fear the very cold ones. In the case of the former, the bees get started in brood-rearing ; and *then*, when the opposite condition comes on, many times bees, in their efforts to save the brood, are chilled to death, to say nothing of the wasted energy and wasted brood. A moderate, steady cold, is much more conducive to successful wintering, both for outdoor and indoor bees, than great extremes.

Later.—The cold wave has already come.

DR. HOWARD'S REPORT ON THE NEW YORK BEE DISEASE, OR BLACK BROOD.

I HAVE just received the manuscript detailing in full Bacteriologist Howard's investigations concerning that new malady that has been afflicting the bee-keepers of Eastern New York. The doctor has made over 1000 microscopic examinations, besides doing a great deal of other work connected with scientific research of this kind.

I have hurriedly gone over the manuscript, and am surprised and pleased at the thoroughness with which he has apparently gone through with the work. He has made eight different pen-drawings direct from the microscope, all of which will be engraved, and the whole will be presented to our readers, probably in our issue for Feb. 15.

To relieve the suspense of some, I will simply say in advance that the doctor (as was stated in the preliminary report) finds this to be an entirely new disease, and quite distinct from foul brood—so different is it from any thing before discovered that he has named it the New York bee disease, or black brood. Further than this it will not be necessary to go into details, because the doctor will be able to speak for himself as soon as the engravings are completed.

THE REFORMED SPELLING ONCE MORE.

NEGATIVE votes against the shorter spelling are coming in pellmell. At the present rate they will bury the affirmative votes for ever out of sight. Not wishing to take any more space on this subject, I would simply say that, for the present, we shall not adopt the proposed shorter spellings. We have for several years used, without offense to any one, words such as *catalog* for *catalogue ; program* for *programme*, etc. There are several other shorter forms, but they have been incorporated so slowly that no one has noticed them ; and whatever change we make in the future will be made on the same plan.

But in giving up for the present the proposed spellings, I have a feeling that, if all reforms were treated in a like manner, very little would be accomplished from century to century. We are still in favor of the shorter spelling, but do not wish to go against the expressed wishes of our subscribers.

A FUTURE FOR CANDIED HONEY.

IT is evident that there will be more of an effort in the future to sell extracted honey in the candied form. C. F. Muth, according to the *American Bee Journal*, established a large trade in granulated honey. In more recent years, R. C. Aikin has demonstrated that large quantities of it can be sold in this way without even the assistance of the city honey-merchant or middleman. The only thing necessary is to educate *consumers* to the fact that candied honey is really and truly honey—just as much so as if it were still in the comb. A bee-keeper who buys the granulated article never objects because it is candied ; and for his own use he would just as soon have it as the liquid, for he knows that it can be brought to the latter condition very easily, and that, while it is in the solid, it can be handled and shipped without danger and without leakage. When we get consumers educated to call for candied honey, or, rather, to accept it as pure bees' honey, then the next thing we shall want to know is how to make extracted honey candy quickly so that it may be made available for the market as soon as possible. There is no trouble about getting honey to candy in Colorado, for it candies there almost before the producers can get it into small vessels.

THE FOUL-BROOD LAW AT THE MICHIGAN CONVENTION.

THE bill that was introduced into the Michigan Legislature a year ago, providing for a foul-brood inspector, failed to pass and become a law because of apathy and lack of support on the part of bee-keepers. When such a bill is introduced in the legislature of any State, and the secretary of the association, or any other person who is interested in its passage, notifies the bee-keepers, or they see notice in the bee-journals, it should be their first duty to write to their representative and senator, urging the importance of the measure, and impressing upon them the necessity of its passage. By flooding the law-makers with personal letters, more can be accomplished than in any other way ; and if bee-keepers do not manifest enough interest in a measure of this kind, which is of vital importance to them, you can not blame the legislators for pigeonholing the bill, and giving their attention to something that is more actively supported. We American people need to learn that, after we have gone to the polls and elected those who are to represent us in the halls of Congress and legislatures, and other offices of trust, our duty is not done. These officers are elected as our servants, and they are anxious to know what we want, and we should be free to write them, especially when a matter is up for discussion in which we have a vital interest. When foul brood is cropping out in different parts of the country, as it seems to be doing of late, it is of the utmost importance that we have necessary laws providing for State inspectors to look after the disease, and hold it in check. Even if foul brood has not gotten a start in your State so far as you know, it would be a wise move to secure such a law at the first opportunity, and get ready for the disease when it does come. If it never comes, no harm has been done; but if it does come, and you are not ready for it, it is liable to do a great deal of harm before you can get the necessary laws in motion that will stamp the disease out, or at least hold it in check. Wisconsin has a most admirable foul-brood law; and the one that it was proposed to pass in Michigan, and which they hope to pass at the next session of the legislature, is modeled after the Wisconsin law. Copies of it may be obtained by those interested by addressing J. M. Rankin, Michigan Agricultural College, Lansing, or N. E. France, Platteville, Wisconsin.

BLACK BROOD AND THE SYMPTOMS.

I HAD intended for this issue to give a report of the proceedings of the New York State Association of Bee-keepers' Societies, held in Geneva, Jan. 10; but the greater part of the discussions related to the new bee disease or malady that is now raging in Eastern New York; and although I took quite extended notes, yet, after having received the report from Dr. W. R. Howard, of his laboratory work, which report seems to cover much of the Geneva discussion, I have decided to omit that part of my report, because Dr. Howard takes up all of these matters from the standpoint of the scientist who weighs carefully all the evidence, and then, aided by his laboratory and his microscope, gives his conclusions. I will, however, give only a description of black brood as was given by Inspector West, for that may enable others to recognize the same trouble that may possibly be in their vicinity. Here are a few of the symptoms that Mr. West gave:

Right in the center of a larva three or four days old, as it lies curled up in the bottom of the cell, may be seen a very small yellow spot, about like the head of a brass pin. This spot appears to be right in the center of the coil, for it will be remembered that a three-days-old larva lies curled up in a circle; and it is in the middle of this circle, or what may be considered the inside of the body, that the yellow spot is found. But the larva is still alive, and will continue to grow; but the spot grows larger until the larva begins to assume the color of a dark-yellow or brown, when it dies. Sometimes the dead matter looks almost like white glue; but when the larva dies after it is capped over, the matter will have a coffee color. It ropes very slightly, and is of a watery consistency; but before it will rope at all it has to be of the right age. When it is remembered that it is only occasionally that this diseased matter will rope, and that only very slightly, and that foul brood *invariably* does so, the dead matter stringing out sometimes two or three inches, it will be seen there is quite a distinct difference.

At its first appearance black brood has a sort of sour smell, while foul brood has a foul or sickening odor like that of a glue-pot.

CARL F. BUCK, AUGUSTA, KANSAS.

THE young man whose face is shown below, who, although only 21 years of age, is bound to make his mark in bee-keeping so far as it relates to his own State, Kansas. Possessed with a good education, gifted with a good deal of push and ambition, he is already pretty extensively engaged in bee-keeping; and that you may know he means business, I will state that he has bought a carload of bee-keepers' supplies, and paid for them. While he is fully able to hold his own, he is backed by considerable property and by a step-father who is one of the most prominent farmers in Butler Co., Kansas. We are glad, therefore, to introduce him to the bee-keepers of the West, and especially to those of Kansas.

THE HOLLOW BATTEN ON HIVE-COVERS; WHO ORIGINATED IT?

IN our issue for Nov. 15, 1899, we illustrated an improved form of the Higginsville cover, or what we called our Excelsior, to distinguish it from the Danzenbaker and other forms of covers. The improvement consisted in the use of a hollow batten to cover the projecting shoulders of the two side or gable boards and the crack formed by them. There was no invention in this, and we did not claim it as such; for the scheme of a hollow batten as a ridge piece on box cars and in building construction is very old. We had not seen it in connection with hive parts, and when we illustrated it we supposed that we were the first to so use it. But after it appeared in GLEANINGS, Mr. Danzenbaker called our attention to the fact that he had used a hollow metal batten, embodying the same principle in his covers two years before, and in proof referred us to his book, "Facts about Bees;" and now in the January *Progressive*, this same cover, the one we illustrated in our Nov. 15th issue, is shown; and of it Mr. Leahy says "we were the first to put it on the market years ago;" but from a private letter I take it that this does not refer to the hollow batten which he says they first made in December, 1898; in proof of which he refers to several parties, among whom may be named W. J. Rouse. We have no desire to deprive the Leahy Co., or any one else, of credit rightly their due; and if the Higginsville people had described or illustrated this cover, at the time they adopted it in December, 1898, we should have given due acknowledgment. But perhaps then we should have had to square up with Mr. Danzenbaker, whose claim for something the same in metal goes back earlier.

THE COLORADO STATE BEE-KEEPERS' CONVENTION, CONTINUED; ALFALFA AS A HONEY-PLANT.

LET'S see. We left off where the bee-keepers of Colorado were discussing the effect of overstocking in many localities. Following this there was a good deal said regarding alfalfa; and in the course of the discussion it developed that this plant, by reason of irrigation, although one of the most certain and reliable sources of honey that there is in the world, does not invariably yield; but sweet clover had never been known to fail; and while it is by no means an important honey-plant in the State, yet coming as it did in connection with and following alfalfa, it went a long way toward piecing out the honey-flow.

And speaking of sweet clover, that reminds me that, while in the State, after tasting many samples, I got so I could tell when there was a little of it in alfalfa honey. The flavor of a little sweet clover in alfalfa is not unlike that of the old hoarhound candy that we used to eat in our childhood days, and is very pleasant. After eating pure alfalfa, one finds it a pleasure to change over to alfalfa and sweet clover mixed, and *vice versa;* but, all things considered, I am of the opinion that pure alfalfa will wear longer than that which has a little of the pleasant flavor of the sweet clover.

Within seven miles of the bees of the Rauchfuss brothers there were something like 2000 colonies, and this locality as a whole was considered exceptionally good for alfalfa and sweet clover combined.

Formerly the alfalfa yielded more honey than now. One reason for this was because the ranchers cut their alfalfa earlier, just at a time when the flowers are at their very best. Still another reason, there are more bees to a given acreage of the plants than in former days. Mr. Adams estimated that there are ten bees now where there was one then. Dairy interests had so increased that it made it necessary to cut alfalfa earlier than usual; but grasshoppers, according to Mr. Porter, were very destructive to alfalfa. Take away these pests, and they could double the number of colonies in a locality. Quite a number assented to this statement.

In the general discussion that followed, it developed that grasshoppers would sometimes clean every thing up. Even corn four feet high has been eaten down clear to the roots; then when alfalfa was in bloom the hoppers had a fashion of eating the bloom itself, letting the rest go

Prof. C. P. Gillette, entomologist for the Colorado Experiment Station, whose picture is here given, was of the opinion that the bee-keepers of the convention were overestimating the damage done by these insect enemies. Their destructive work could be greatly reduced by plowing the eggs under the sod at certain seasons of the year; but when the pests are at work they can be destroyed by what is known as "bran mash" distributed along the outside of the field. The question was asked how to make the mash. The professor said that the formula usually given was one part of Paris green to six of good sharp bran and some cheap molasses. Some thought this too strong, and that less of the Paris green would do just as well. Sometimes a little white arsenic to two pounds of mash with molasses was used.

PROF. C. P. GILLETTE.

And speaking of Prof. Gillette, he is one of the most approachable and genial of men one often meets. He takes an unusual interest in bees, and at the experiment station at Fort Collins has conducted a variety of experiments in apiculture, the results of which he has given at the regular meetings of the Colorado State Convention. It is with no little pleasure that I introduce one of whom I feel we shall hear more of in the future.

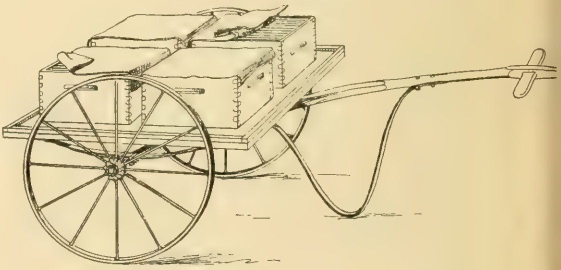
SEPARATORS VS. NO SEPARATORS FOR COLORADO.

On the afternoon of the second day a very spirited discussion arose over whether it was necessary or advisable to use separators in the production of comb honey. J. E. Lyon took very decided grounds against them. He had, he said, produced comb honey extensively without them, and he thought his honey would compare favorably with any separatored honey produced. Separators were an expense and a nuisance—a nuisance, because they invited burr-comb attachments to the comb surfaces, and because they retarded the prompt entering of the bees into the supers. If he were to use separators at all, he would favor, he thought, slatted separators on the plan of the fence. He regarded free communication clear through the super very important, and a super *without* separators he believed was far superior to any thing *with* them. Yes, sir; he would challenge any man to produce better honey with separators than he could without. Mr Herman Rauchfuss very promptly rose to his feet, and accepted the challenge then and there, and then the fun began. While one or two favored this position of Mr. Lyon, the majority, including the Rauchfuss brothers and President Aiken, took decidedly the opposite view. Sec Rauchfuss read a letter from a prominent commission house, urging that bee-keepers use separators, as non-separatored honey was often unsalable, and brought a lower price. "Shots" were fired back and forth in lively succession, greatly to the enlivenment of the convention and the merriment of the members. Some one, I do not recall who, said it was a common practice in his vicinity to use one or two separators in a case; that this was a saving in expense, and the bees were more ready to enter the supers. This invited a regular fusilade from the separator men, who were strongly in the majority. When the discussion had all but closed, with the non-separator fellows all but squelched, President Aiken, evidently to complete the process of "squelching," arose and said there was a time when he had advocated before that association the use of no separators in the production of comb honey; but he felt that he had made a serious mistake; and if bee-keepers would forgive him he would *never do so again*. He had seen some of the poor non-separatored honey on the market, and felt that such goods were a poor advertisement for the Colorado bee-keepers. He now used and recommended *all* to use separators. While he admitted that Mr. Lyon's honey *might* be first-class, yet the majority of bee-keepers would do far better to use separators, in his estimation; and then, turning to Mr. Lyon, he didn't believe his (Lyon's) honey would be classed in the same grade with a first-class article produced with separators. Mr. Lyon, in response, grinned a smile that indicated he was not squelched, but of the "same opinion still."

W. L. COGGSHALL AND HIS LIGHTNING OPERATOR.

W. L. Coggshall owns and operates—well, he does not know exactly how many, but somewhere from 1100 to 1200 colonies. These are distributed among some ten different yards, the furthest one being something like 40 miles from the home apiary. They are scattered among the hills between lakes Cayuga and Skaneateles, and hardly a better location for such extensive bee-keeping could be found in the whole State. His brother, David C., formerly his partner in business, now owns something like 600 colonies, and the two have covered almost all the territory between the two lakes with apiaries that range from two to three miles apart.

W. L. COGGSHALL.



COGGSHALL'S EXTRACTING HAND-CART.

There is probably no man in the world who secures as large a number of pounds of honey per colony, with as little labor as W. L. Coggshall. Indeed, his record, and that of his helpers in extracting, is something phenomenal. An extracting-house, extractor, and all other appurtenances, are stationed at each yard; and it is the custom for Mr. Coggshall to take with him two or three men, also a load of kegs, barrels, and half-barrels. Arriving at the yard, they don their armor-proof bee-suits, because no ordinary sting proof clothing would answer. They then proceed to extract, not after the orthodox fashion, but in a manner that would make the hair of an average bee-keeper stand on end. The hives are ripped open—yes, even kicked open, sometimes, if a kick will do it more quickly—smoke is driven down between the frames, combs are jerked out, and with a peculiar nervous trembling motion, which they have acquired, they will shake the bees almost entirely off. What few may remain are cleaned off the combs with one or two sweeps of a long whisk-broom which the apiarist has tied to his person. The air may be filled with mad stinging bees, but that makes no difference; the work goes on just the same. The combs, as fast as cleaned, are set down in regular hive-supers placed on a hand-cart. As soon as four supers are filled with combs, one of the boys draws the hand-cart to the extracting-house where the combs are uncapped and extracted at a speed that defies competition. One of Mr. Coggshall's "lightning operators" and two boys actually took from the hives one afternoon, 1400 lbs. of honey in an hour and a quarter, or at the rate of over 1100 lbs. an hour. This included taking combs out of the hive, brushing bees off, uncapping, extracting, putting the honey into kegs, and replacing the combs. This record is the more remarkable from the fact that a non-reversible extractor was used, and that the "operator" is of light build, and the boys both under 16. Some of the other records are, 900 lbs. in one hour for two men; and 2500 lbs. in a day for one operator and two boys.

That Mr. Coggshall and his brother have made money with their bees is evidenced from the fact that they live in two very fine modern residences, finished off inside with hard wood, heated by furnaces and equipped with modern plumbing; modern barns and modern machinery of every kind are found about their premises. And besides their beautiful large farms which they operate between times, I understand they have some snug sums of money laid up for a rainy day in the way of life insurance and substantial bank accounts.

Mr. Coggshall places the locality first, the man second, hives last. That he thoroughly believes in this is attested by the fact that he has one of the finest locations in the world, right in the heart of the great buckwheat country, so famous for its immense crops, and by the further fact that he himself is an alert, keen business man, ever active, always studying the shortest cuts, and ever watchful of the latest methods. His hives—well, the less said about them the better. They are any thing and every thing, but generally of the eight-frame Langstroth type—such hives as he has been able to buy up from his less successful neighbors who tried their hand at keeping bees and did not make them pay. He will take these same bees and the same hives in the same location, and make them return to him a big revenue, thus proving that there is something besides locality in getting honey.

Mr. Coggshall is, in some ways, the most remarkable bee-keeper in the United States. While the majority of us would feel that we could not afford to use the hives and methods (the kicking and the stinging) employed by him, yet there is no denying the fact that he produces great results in spite of the stings, and in spite of robbing and the home-made equipments that he makes for himself.

OUR HOMES,

BY A. I. ROOT.

He brought me up also out of a horrible pit, out of the miry clay, and set my feet upon a rock, and established my goings.—PSALM 40:2.

While I write this 20th day of January, in Medina Co. at least it is very hard getting around anywhere unless one keeps on the stone pavement or on the limestone roads. The weather is very mild for the time of year. In fact, there has not been a frost, or at least none to mention, for more than a week; and if you get off the walks into the Medina clay, your feet will slip around in every direction so you can hardly stand up, let alone making any headway, *especially* if you attempt to cross a plowed field. You may wear rubbers, it is true, but your rubbers will stick tighter in the miry clay than they will to your feet; and if you undertake to do any kind of work without a stone pavement to step on, or a plank or board, you will likely get your feet wet, catch cold, and be very much disgusted with outdoor work in the winter time, with nothing to *stand* on. At such a time you can appreciate, as perhaps never before, a good solid stone walk. Gravel does very well, but it is apt to be more or less yielding. Bricks are better than nothing at all, but they will slip out of place, and get more or less edgewise unless they have a good foundation underneath. There is nothing like *solid rock*. Sometimes one of the underdrains gets stopped up—possibly the cellar drain—and you are actually obliged to get into the mud and water, and work after a fashion. Oh how good it seems after you get the thing finished, and can pull your rubbers out of the mud, scrape off the clay—better still wash them off clean—and get the solid rock once more under your feet! I am inclined to think David also had some experiences that he remembered, when he spoke in our text about "the miry clay."

Our pastor has just said he wants me to give a talk of six minutes to-morrow evening at our church. The subject is, what Christianity has done for me. I expect my reply to be the text at the head of this chapter. Well do I remember the miry clay of sin out of which the dear Savior lifted me at the time in my life when I promised to give up all and follow him. I think I was between 30 and 40 years of age. I remember distinctly that, during the early portion of my life, I was a good deal worried because the world did not give me the credit I thought I ought to have. I thought I did not get my just dues, and I was an ardent believer in what was then termed "blowing one's own horn." As I look back I am ashamed to think how persistently I kept tooting my little horn, in season and out of season. One of the first things that called my attention to the teachings of Christ Jesus was a text that has been a great favorite of mine all through my Christian life: "Blessed are ye when men shall revile you, and persecute you, and say all manner of evil against you falsely, for my sake." Then there is another that went along with it: "Love your enemies; do good to them that hate you." I remember one day when I was a good deal stirred up because somebody in a business deal had accused me of something of which I was entirely innocent. I wanted to teach him good manners, and fight it out; but the little text came up before me, "But I say unto you, Love your enemies; do good to them that hate you; bless them that curse you, and pray for them which despitefully use you." An accident held the text up before me. I was repairing a piece of jewelry, and, strangely enough, this text was set in the jewel. As I held it up before my eye the words seemed to be written across the sky. Something led me to ponder on them. Said I to myself, "What strange words are these!" and I remember telling somebody afterward that these words must be divine, not human. From this incident I was led to hunt them up in the unused Bible at home. Some of you may remember how it turned out. In studying that perfect life that is revealed in the Scriptures, I lost sight of A. I. Root, in my reverence and admiration for the Man who is both human and divine—the Lamb of God that taketh away the sin of the world. I got over the idea that the world was not giving me a fair chance, and in a very little time things had changed around so that it seemed to me I was getting a great deal of credit for only a little self-sacrifice. The world, which I had before regarded with suspicion, seemed far kinder to me than I deserved. A few days ago I was talking to some young friends—some smart young business men — in regard to being truthful in *all* our statements, especially in print, of being truthful, not only in *letter* but in *spirit*, in choosing words that would convey just the *exact* truth, being very careful not to use any form of expression that might lead anybody to get an exaggerated view, though the words used are literally true. My companions laughed at me a little because I was so tenacious on the point of not *overstating*. One of them smilingly remarked that everybody knew I was *built* that way. I replied, "No, no, boys, I am *not* built that way. I am not moderate and truthful in my statements because it is natural for me to be so. I can not think it possible that any one of you finds it is as hard work to keep clear inside the bounds of truth and honesty as I do." And, dear friends, I think so still. With my peculiar temperament, with my hopefulness and enthusiasm, it is the most natural thing in the world for me to exaggerate. If I have a reputation for honesty, it is the result of hard fights in that direction. And there is one queer thing in this connection that I like to speak of. The world at large has always given me more credit in this direction than I deserve. I have put down self, and held back inclination. It is true, that, when I have done a very little in this line, very unexpectedly to me I have received even more credit than I deserve; and this is true, mind you, in a thousand different ways. I did not start out to make a good record in order that I might gain money or make a reputation. I did it because I had my eye on Christ Jesus, and I tried to be right in his sight; and he in his loving kindness has rewarded me when I least expected it. Truly he has brought me out of the miry clay, and set my feet upon a rock, and established my goings; and what little I have accomplished has been for his dear name's sake, and not for the applause of the world. Again and again I have been reminded of the concluding words of that wonderful 25th chapter of Matthew, "Lord, when saw we thee a hungered, and fed thee? or thirsty, and gave thee drink?" You see, these persons had forgotten all about it. They did not seem to be aware they had done any thing. But the king said, "Come, ye blessed of my Father, inherit the kingdom prepared for you from the foundation of the world."

In my visits to the jail, I have almost invariably found the criminals complaining that they were the victims of spite or prejudice; that the man who is *really* guilty had slipped out and left them to suffer; and I believe this is mostly the state of heart, the world over, of criminals. *They* are never at fault — it is always *circumstances*. Now note the contrast. With the true Christian it is almost always the other way. He has had a better time and better treatment than he had any right to expect. Mankind are, as a rule, fair and honorable. They have given him good measure. God, too, has been liberal and kind, and given him good measure, full to overflowing. His heart goes out in thanksgiving, not only to God, but to all those around him. From the standpoint that the world takes, everybody is always ready to give a man a kick who is going down hill. But this is not Bible teaching at all. The Bible says those who are faithful in few things shall be made rulers over many things. Of course, the Scriptures demand that a man be honest and true. He can not expect to stand on the solid rock, nor receive any of these benefits I have been speaking of, until he loses sight of self and selfish feelings. When he tries to make his record clear before God, then the world is glad to help him and trust him. You know what the Bible says about this: "When a man's ways please the Lord, he maketh even his enemies to be at peace with him." Oh how many times I have seen this very thing verified! We can not be at peace with *everybody*. The faithful follower of Christ Jesus must resent and rebuke wrong; he must awaken the wrath of the evil-disposed; but these very men, when they find he is on the solid rock of Christ Jesus, will honor and respect him, and think more of him in the end, for having insisted on that which is right and honest and pure, than if he had let them go unrebuked when it was his *business* to call them to a halt.

Our pastor, in a recent sermon, said there was a great underlying truth that was too much out of sight, involved when the Savior spoke of loving our enemies. We should love our enemies because they tell us our faults, while our friends would never think of doing it. They, of course, may exaggerate; but every Christian man should carefully consider what his enemies have said about him, and inquire if there be not at least *some* partial truth in their statements.. The real Christian—one who is lifted out of the miry clay, with his feet on the solid rock—need not be troubled about enemies. They will only do him good, and crowd him up closer to his Savior, where he may take a more *firm* hold on that strong arm that first lifted him out of sin. I am sure I need enemies. I need obstacles thrown in my way, especially if I wish to continue making progress in the straight and narrow path that leads from earth to heaven. Now, if you are worried about what people may say about you, remember your old friend A. I. Root says it is most likely it is because *you* are out of the straight and narrow path, and standing in the miry clay. Put out your hand to the dear Savior, and let him lift you up, and then when your feet are on the rock of Christ Jesus, not only will you not be troubled, but you will find it is not such a very hard thing, after all, to "*love* your enemies, bless them that curse you, do good to those who hate you, and pray for them who despitefully use you."

GOOD FOR THE STATE OF VERMONT.

We copy the following from a recent issue of the *Rural New-Yorker*. It looks as if the millennium were on the way to our United States —at least part of them. The Vermont State Fair managers printed this notice in large type right in their premium list pamphlet:

> Now, then, three-card monte and shell-game men; snides, gamblers, fakes, and bums of every sort, kind, and description, take notice! That gambling of every sort and form, and the sale of beer, ale, wine, or other intoxicating liquors, will be excluded from and about the grounds. If, as you say, we can not run without you and your goods, we will close our gates. We neither want nor will we tolerate you; and by this we serve notice upon you that, if you come, prison-doors yawn for you.

THE LIQUOR BUSINESS IN OUR NEW POSSESSIONS, ETC.

It makes our heart ache to know that American liquor is being sent to our new possessions in immense quantities, and that those islands are having disgraceful examples set to them by our soldiers. That the highest officers of our government cater to the liquor element grows more and more apparent, and the majority of our daily papers are owned body and soul by that element, and I feel that such publications as yours are doing a blessed work in helping to make known the truth in regard to this matter.

Newhall, Cal., Jan. 17. A. M. WARD.

My good friend, some of the dailies are taking a pretty strong stand for temperance, especially in the enforcement of law. In answer to a direct question, the Cleveland *News and Herald* lately replied that the intemperance in the Philippines was almost altogether among the American soldiers, and that the natives had very little to do with it, and were much more temperate than the Americans, as they always have been. Now they seem to insinuate that, so long as these new saloons that our people are planting are patronized almost entirely by American soldiers only, it was not so very bad; but, oh dear me! can an American saloon, patronized by American soldiers, be planted in any spot on the face of the earth, where its example is not going to bring ruin and death sooner or later?

GOOD NEWS FROM CALIFORNIA, THE CITY OF THE ANGELS INCLUDED

Friend A. I. Root:—I note what you say under the head of Home Talks about our beautiful City of the Angels, and you ask if the city is up to date with reforms. Yes, this city adopted the anti-spit ordinance some time ago. I think it was among the first to adopt. I don't know that there have been any arrests; but the knowledge of the ordinance is sufficient to make all self-respecting people, and even others, respect the law; and, as a consequence, our sidewalks present a tidy appearance nearly all the time.

Then for several blocks in the business portion of the city, and on three of our principal streets, they have discarded the street-sweeping machine and substituted hand sweeping. These sweepers are dressed in white duck suits, and they are very appropriately called the "white angels." Tin boxes that will hold a bushel or more, and three or four to a block, are set on the curbing, and the sweepings are all put into these boxes, so there is no manure on the streets, or pieces of paper or any filth. As our streets are asphalt, they are almost as clean as the sidewalks. You will, therefore, see that the city is fully up to date as to the matter of cleanliness.

Upon this western coast there is the utmost religious toleration, and there are probably more religions here than anywhere else in the United States. We had a Brahmin lecturing here a few nights ago, and he was accorded a good audience.

Well, this is a very good day for Southern California, for it is raining steadily. We had a fine rain in the middle of October, then in the middle of November, and now this fine rain is coming just right to keep vegetation booming. In the northern portion of the State there has been too much rain, and the ground is too soft for farm work. We have great faith that this will be a good honey season, with plenty of rain all through the winter. J. H. MARTIN.

Los Angeles, Cal., Dec. 16.

HIGH PRESSURE GARDENING BY A. I. ROOT.

ALSIKE CLOVER, SOME VALUABLE SUGGESTIONS IN GROWING IT; A SUCCESS WITH BOTH ALSIKE AND MEDIUM RED CLOVER SOWN IN THE MIDDLE OF JULY.

I have 4½ acres of land in the corporate limits of our village. The spring of 1897 I planted it to corn, and on July 16th I sowed alsike and timothy, about half and half, on possibly a little over an acre, and on half of the rest I sowed flat turnip seed thinly; then I took the end sections off my Breed weeder, and went once between the rows both ways. I had a fine stand of clover and timothy, and 100 bushels of turnips, and 75 of fine corn, per acre. The summer of 1898 I cut 4 tons of fine hay, first crop, and 2 tons second crop; and July 10th, 1898, I seeded the rest of my ground (which was planted to corn) with medium red clover, with a few flat-turnip seed mixed in, and had a fine stand of clover and 100 bushels of fine turnips and 75 of corn per acre. Last spring I plowed the red clover under, which was a foot in height, and again I planted to corn, and July 5th I seeded the whole to alsike and timothy, half and half, and again mixed in a few flat-turnip seed, and went over with the weeder as before. Last fall I had a fine stand of clover and timothy, 125 bushels of turnips, and 75 of corn, per acre. I shall let the grass stand next season: and if you care to know the result, I will let you know in the fall, if Providence is favorable. I also cut 5 tons of fine hay from first seeding. I cut it quite late, so I did not cut a second; but there was sufficient growth to have pastured my team all fall had the situation been favorable, aside from the above. I built a honey-house and bee-yard on this acre, which made some less to cut from last year.

I mention the weeder, and corn and turnip crop merely to show what can be done in the way of cultivating and growing crops. If all farmers would follow this method of seeding their corn ground with some kind of clover at last cultivating, it would not only be a source of enriching the soil, if plowed under, but also furnish fine fall pasture for calves and sheep. It is cheaper to grow clover than weeds.

Hillsboro, Wis., Jan. 22. ELIAS FOX.

In conclusion I would say that the bees worked the whole day on this clover, and it is the best hay I ever fed, almost entirely free from dust, nearly as green in color as the day it was cut, and the stems are so fine and branchy that there is no refuse left. Every stem is eaten. E. F.

A great many are all the while asking if alsike, red clover, etc., will succeed if sown in the fall. I have always discouraged such experiments as being almost sure to fail. The above valuable report indicates, however, that alsike medium red, as well as crimson clover, may all be sown in July, and perhaps in many localities in August, with a fair chance of getting a good stand.

PLANT-GROWTH.

I am still studying plant-growth. Almost every plant that I have tried in pots puts out these same white fibrous roots covered with tiny hairlike fibrous "feelers," I feel like calling them, pushing out in every direction for food and moisture. The tiny seed sends out these same kinds of roots, also the cutting; and I have just succeeded in getting roots from a piece of a coleus *leaf*. By the use of the pots, commencing with the smallest thumb-pot, and then increasing in size gradually, we can see this root growth from its start. When the plant is in full vigor, and the soil just suits it, the temperature and moisture just right, these roots push out with wonderful rapidity. I have seen them run clear around the pot, not only once but twice, when it seemed as if it could not have been more than two days since I examined them. In the forcing-bed, where we keep a temperature of between 70 and 80, with the air full of moisture, these roots push out into the open air, and crawl over the sides of the pot, so you can almost see them move; and when this root growth is rampant, then the plant is at its best. The lady florist at the Wisconsin institute suggested an idea that is to me of exceeding value, and I am sure she is right. She said if you put your plant into a pot that is too large, the soil not permeated by the roots is apt to become sour, especially under the influence of too much moisture and high temperature.* Now, if the pot is small enough so the roots can go all through it, these little roots can keep it from spoiling, and purify it and make it sweet. Now, please notice in bee culture we put our empty combs for safe keeping in with the bees. If the cluster of bees is large enough they will not only keep every thing pure and sweet, but they will cleanse old moldy combs, utilizing every bit that is good, and carrying out the bad. I have told you in the A B C book how it seems almost miraculous the way in which they will restore and renovate an old moldy comb in just a few hours. Well, plant life is akin to insect life; and finally the life of the living animal is along in the same line. When any wound or disease attacks the living tissue, nature, by a simple process, builds up anew, not only skin, but even muscle and bone; rejects decay and disease, and keeps out mortification, etc.

I have been more than ever impressed with the fact that plants want air as well as moisture. My potting soil is jadoo, or jadoo and sand. For small pots we put in the pots a little sphagnum moss. Now, the hole in the bottom of the pot must be kept open; and if the pots are plunged in the beds in the greenhouse up to their rims, be sure this drainage-hole does not get stopped up. When every thing is right, these little white roots will go all through the sphagnum moss, as well as around the sides of the pot. Then they will crawl out of the hole for drainage. It makes me think of a lot of chickens pushing their explorations over into their neighbors' premises for "something good." I believe farm crops often suffer, especially during a wet time, from a lack of air for these little feeding-roots. How great is the importance, then, of thorough underdraining!

My little salvia that grew in a thumb-pot with perhaps a teaspoonful of jadoo and as much more of sand, is in the same little pot still, and is budded to blossom. The pot is just filled with a mass of roots, and I have been keeping it there to see how large a plant can be grown in a small amount of soil, if the air and moisture were kept just right. I expect to give you a picture of these in our next issue.

When I gave a picture of my little greenhouse in our issue for Jan. 1, I did not mean to recommend it for large growers who have houses 200 or 300 feet long. One of our most skillful growers of Grand Rapids lettuce has offered a very pleasant criticism, which will appear in our next issue; and he also suggests quite a new departure in the way of greenhouse-building for Grand Rapids lettuce, and, in fact, for almost any other purpose in northern regions where snow and frost prevail.

Miscellaneous Questions.

I have been told that if you take five drops of chloroform on sugar, swallowed before it evaporates, it is a sure cure for sea-sickness.

If trees are whitewashed with lime and copperas, mice will not eat the bark off them.

It is said that if you put fresh pine sawdust in hens' nests, lice will not stay on them. R. HISLOP.

Strasburg, Ont., Dec. 20.

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* This souring of the soil, of course, takes place only where plants are kept indoors or in a greenhouse. Where earth is out in the open air, nature looks out for keeping it sweet. Now, if you have a sick plant that stands still, and does not grow, first remove the pot and wash it thoroughly; then dip it in boiling water to remove all germs of disease. Now shake most of the dirt off the roots of the plant and put it into the smallest pot possible; then pack it firmly with good fresh soil. We have the best success with jadoo and sand of any thing we ever tried. Now dip the whole thing in soft warm water, then place it in some place where the temperature is even, and do not water it any more until the plant starts to grow and needs water. If there is any such thing as revivifying it, this treatment will start the roots I have been speaking of. Do not be afraid of hurting it by taking it out of the pot every day to see how it progresses. Letting in some air will do it good If you do not know how to get a plant out of a pot, you must learn how. Put your fingers around the stem, up against the soil, so as to hold it. Now invert it and strike the edge of the pot on something solid, say on the edge of a stone crock or the metal of your spade. If it does not start readily, turn the pot around and strike it first on one side and then on the other; then look out for the little roots. When you see just one white root coming out between the pot and the soil, your plant is on the road to health. Do not water any more until the soil becomes quite dry, and then give it another soaking.

Chloroform administered as above might prevent sea-sickness, although I doubt it somewhat. A good article of extract of Jamaica ginger is the best thing I know of for seasickness, and nausea from other causes. Several small doses, taken as often as the nausea returns, have often banished it entirely.

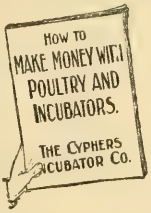
Various substances put on with whitewash will keep off mice; and if you use a whitewash of Portland cement it will probably keep off borers also. I do not think that the addition of copperas would harm the trees; but a great many things have been recommended and tried that have killed the trees, so you want to look out. Our experiment stations are making some thorough tests in this matter. Better follow their advice. I think very likely fresh pine sawdust would have the effect you mention. Perhaps our poultrymen can tell us more about it.

Advertiser's Department of Short Write-ups.

THE LAND OF BREAD AND BUTTER

is the title of a new illustrated pamphlet just issued by the Chicago, Milwaukee & St. Paul Railway, relating more especially to the land along the new line it is now building through Bon Homme and Charles Mix Counties in South Dakota. It will be found very interesting reading. A copy will be mailed free on receipt of 2-cent stamp for postage. Address Geo. H. Heafford, General Passenger Agent, Chicago, Ill.

Cost $4000; You Get It For 15 Cents.



The Money-Makers in the poultry business, whether owning a dozen hens or a thousand, are the people who watch what other successful poultry-keepers are doing and how they do it. It is to disseminate just such knowledge as this that "*How to Make Money with Poultry and Incubators*" was published It is admittedly the handsomest book ever printed treating of the poultry question. It contains nearly 200 illustrations and numerous other features which brought its cost up to more than $4,000 While it gives complete information regarding the *Cyphers Incubator* it is primarily a guide and manual for the person who is considering poultry from a purely business and money-making stand point. Its 192 pages (9x11 inches) are filled with practical articles, written expressly for this book by leading poultry experts. For example, Geo. H. Pollard, the well-known practical poultryman, contributes three chapters on "Profitable Broiler Raising," "Winter Chickens or Roasters," and "Best Breeds for the Market." Michael K. Boyer of national reputation, has an article on "Poultry for Profit on One Acre;" Myra V. Norys tells what energetic women have done in "Women's Work with Poultry:" A. F. Hunter, the well-known editor, discusses the "Demand for Fresh Eggs and How to Meet It;" Jas. Dryden, of the Utah Experiment station, writes of "Pullets vs. Hens as Profitable Layers." These are only a few of the many special articles. In addition there are many photographic illustrations and descriptions of the largest and most successful poultry farms in the world; also numerous copyrighted plans and specifications for laying and brooding houses, together with letters from over 250 successful poultry keepers reporting their experience with the Cyphers Incubators. Sent to any address for 15c. postage. Ask for Book No. 74 Address nearest office, The Cyphers Incubator Co., Chicago, Ill., Wayland, N. Y., Boston, Mass

For Sale. One 10-h.-p. horizontal engine, 1 10-h.-p. boiler with 25 feet of line-shafting, pump, pulleys, and belting, for $250.00; one 18-inch Gem planer, $75.00; one saw table, cut-off and rip combined, $20.00; one automatic cutter-head, $25.00. I will take $330.00 for the whole lot of machinery if taken by Feb. 15. If any of the machines are sold such price will be deducted from the others.

J. W. Bittenbender, Knoxville, Iowa.

Sharpless Cream Separators—Profitable Dairying.

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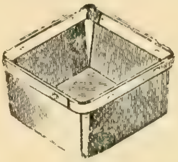

Bee-keepers' Supplies.

We allow a Liberal Discount on early orders. Why not send for your supplies now to save the discount and avoid the rush of the busy season? Catalog and price list free. Address

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Best farmer's fowl; large size; mature early; yellow skin; no pin-feathers to show; great layers; PRIZE WINNERS.

BLACK MINORCAS. . . . . . .

Large size; layers of large eggs; are PRIZE WINNERS. Prices reasonable for eggs and stock.

Robert Mairet, - - Akron, Ohio.

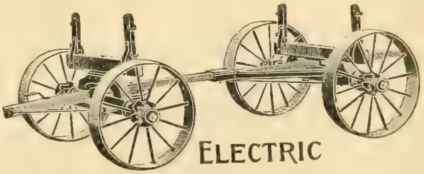
Root's Goods for California.

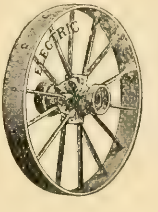
We have just received a large carload of sections, extractors, smokers, veils, etc., direct from the factory, and are prepared to supply bee-keepers with the same promptly. Do not send a long distance and pay high freights. Write for our prices.

M. R. MADARY, - Fresno, California.

Farm Wagon Economy.

The economy of this proposition is not all found in the very reasonable price of the wagon itself, but in the great amount of labor it will save, and its great durability. The Electric Wheel Co., who make this Electric Handy Wagon and the now famous Electric Wheels, have solved the problem of a successful and durable low-down wagon at a reasonable price.





This wagon is composed of the best material throughout—white hickory axles, steel wheels, steel hounds, etc. Guaranteed to carry 4000 lbs. These Electric Steel Wheels are made to fit any wagon, and make practically a new wagon out of the old one. They can be had in any height desired, and any width of tire up to 8 inches. With an extra set of these wheels a farmer can interchange them with his regular wheels and have a high or low down wagon at will. Write for catalog of the full "Electric Line" to Electric Wheel Co., Box 95, Quincy, Ill.

In writing to advertisers, mention Gleanings.

SPECIAL NOTICES BY BUSINESS MANAGER

CATALOG FOR 1900.

As soon as this issue of GLEANINGS is off the press we begin printing catalogs, and expect to have some ready for distribution before the 15th. We have wrappers all addressed, and catalogs will be inclosed in them, and mailed just as fast as we can make up the catalogs. If you get tired waiting for yours to come, send a request on a postal and it will be mailed. If you get an extra one, hand it to some one who would be interested. We hope to print and distribute over 100,000 during the month of Februray.

OHIO MAPLE SYRUP.

Do you know that Ohio produces the finest maple syrup to be had anywhere? Do you know that, according to the pure-food laws of this State, every gallon put up here must have the name of the producer on the label, and there is a heavy fine for adulteration? The result is that Ohio maple syrup can be depended on every time. Do you want something fine for buckwheat cakes this winter? something that will please all of your family? then order some of our maple syrup at once. In one-gallon cans, $1.00; same in lots of five one-gal. cans at 90 cts. per gallon; ten one-gal. cans at 85 cts. per gal.

BEESWAX WANTED.

We will pay from this date, till further notice, 26 cents cash, 28 cents in trade, for average wax delivered here, and from 1 to 2 cents extra for choice to fancy yellow. We are making up foundation now at the rate of one to two tons a week, and it takes this amount of wax to keep us going. If you have any to spare, send it on, and be sure to place your name and address in or on the shipment, so that we can identify it. Also write to us, stating gross and net weight of shipment, so that we may be able to determine whether any has been lost on the way. If shipped in bags they should be very strong, and double as well. If shipped in barrels or boxes, be sure they are tight and securely nailed.

Special Notices by A. I. Root.

THE GIANT GIBARALTER ONION.

By an omission this was not put among the novelties. Price of seed, 15c per ounce; $2.00 per lb.

WANTED, CRIMSON CLOVER, JAPANESE BUCKWHEAT, AND HULLED SWEET CLOVER.

If you have any of the above for sale, mail us samples and tell us what price you want for it.

WISCONSIN FARMERS' INSTITUTES.

Ever since my visit at Madison some years ago, at the time of the Farmers' State Institute, I have looked over with special interest the annual reports that somebody has been so kind as to send me. For 1899 it is a neatly bound book of 265 pages, brimful of half-tones from real life. When you are reading the reports of the proceedings you have the pleasure of seeing the speaker's face in nice half-tone right at the head of the chapter. Then you have half-tones of the farmers' homes, different crops, buildings, etc.; and last, but not least, there are some beautiful pictures of the farmers' wives who took part in the proceedings. I should like to ask if there are really more such fine-looking women in Wisconsin, taking them just as they come, or did they pick out their best? Not only butter-making but housekeeping in general is discussed—cooking, and even setting the farmer's table; and then the excellent talks that go along with these beautiful pictures—why! if these good people we get acquainted with in this book had a chance to handle the affairs of State and nation, our country would be in no danger; and if these bright and intelligent women were allowed to vote, the beer-brewers *certainly* would not run all our public affairs. One young lady gave us a talk on greenhouse work and growing plants at farmers' homes Why! that talk was just worth a big lot to me. She had her pots and plants right on the stage, and went through the whole operation of making cuttings, potting plants, watering, and all the things that are so difficult to learn from books alone. Long live Wisconsin! The book is sent to Wisconsin people for 10 cts. paper, or 25 cts. bound in cloth; outside of the State, 25 cts. paper, or 40 cts. bound in cloth. Address Geo. McKerrow, Agricultural College, Madison, Wis.

WAX BEANS AND BEANS IN GENERAL FOR 1900.

Some of the friends have no doubt thought it pretty hard that there should be such a margin between the paying price and the selling price of staple garden seeds. Perhaps a little incident will illustrate this. Eugene Davis, the originator of the Davis wax bean, wrote me some time in the fall that he had about a dozen bushels of Davis wax beans for seed that I might have for $2.50 per bushel. I told him to send them along at once, and you may remember I advertised them at $4.25 per bushel, which you no doubt think is a pretty good margin; but we found only one customer at this price among our gardening friends. He took, I believe, two bushels. But Vaughn, of Chicago, told me at once that he would take the whole lot at $4.25; but if I sold out entirely at $4.25 I should have none left to retail, so I let Vaughn have about half of them. Now, it would be folly to sell the remaining half at $4 25 at retail when I was offered $4.25 for the lot; besides, it would be an injustice to seedsmen to offer them at this price when *they* are asking from $6 50 to $7.00. You often do a neighbor harm by underselling him, especially where you are at the same time a good deal below the general market; therefore I have put what I have left at $1.50 a peck. Of course I told friend Davis that, although the beans at $2.50 was a fair and square bargain, yet since I found they were worth a good deal more I would divide with him the larger price I received. He expressed some surprise, it is true; but I tell you, friends, that is the *way* to do business. Now, when goods you have in stock advance in price as above, it is all very clear sailing; but suppose they go the other way, as they often do. Another thing, it is not certain that I shall sell all of my beans at $1.50 per peck. I could sell them now, but the greater part of our customers will wait till planting time. Of course, we urge them to buy sooner, but past experience shows that a great many will wait until it is even late for planting, then send in their money, and want the beans "rushed." How many shall I save for such people? No one can tell. If I save too many, or carry them over to another season, I may not get even the $2.50 I first paid friend Davis. A good many times I have had a chance to sell out my whole stock of certain seeds at a good profit; but a seedsman who really looks out for the best interests of his customers must keep a stock, and thus have more or less goods left over; and many kinds of seeds, after the season is over, are of little or no use whatever. Now, can you not see that, in order to have the very best fresh seeds constantly in stock, to be shipped the minute you receive the order, there must be a good round margin to cover unavoidable losses?

A SUGGESTION IN REGARD TO CLOSETS.

I want to say yes to all you said in regard to water-closets. How strange no more attention is given to such! While we all can not have them warmed, yet I took the idea long ago to pad the seats with old woolen cloth, tacking it on after being cut into shape. No one knows the pleasure, in a cold time, of sitting on woolen instead of a cold board. I feel quite sure more colds come from closet exposure than all others combined. Many times they are open so the wind comes in on all sides and below, and the awful disease consumption finds a starting-point. E. P. CHURCHILL.

Hallowell, Me., Jan. 15.

CONVENTION NOTICES.

CALIFORNIA BEE-KEEPERS' CONVENTION.

The tenth annual convention of the California State Bee-keepers' Association will be held in the Chamber of Commerce, at Los Angeles, on Feb. 21 and 22, 1900. Convention will be called to order at 1:30 P. M., on Feb. 21. At this time the railroads will sell round-trip tickets to everybody, for one and one-third fare, on account of the Industrial, Mining, and Citrus Exposition, which will be held in Los Angeles. Tickets good for ten days. Let every bee-keeper bring some hive, tool, or experience which he has found valuable, and we will have a good convention.

R. WILKIN, Pres.
J. F. M'INTYRE, Sec.

GINSENG WE ARE HEADQUARTERS FOR **Seed & Plants**

All the latest instructions about it; its value; what used for and how to grow it. This valuable information **FREE** for a stamp.

AMERICAN GINSENG GARDENS, ROSE HILL, New York.

Here is the Thing You were Looking for the last winter

The New Champion Winter-case

which does away with all unnecessary work, and in which the bees will not die in the coldest winter. Send for special prices on quantity wanted.

R. H. SCHMIDT & CO.,
Sheboygan, - Wisconsin.

FOR SALE.

Wishing to go west I will sell my apiary and apiarian supplies, situated in North Mexico, Audrain Co., Mo., consisting of about 80 colonies, mostly in Langstroth hives, with good shop and supplies, well situated. Also a four-acre lot, well improved, including poultry-house and yards; some 50 fine young fruit-trees. This property is well situated for poultry, fruits, and apiculture. Call on, or address below.

P. P. COLLIER, - BOX 22, - MEXICO, MO.

Wants and Exchange.

Notices will be inserted under this head at one-half our usual rates. You must SAY you want your ad in this department, or we will not be responsible for any error. You can have the notice as many lines as you please; but all over ten lines will cost you according to our regular rates. We can not be responsible for dissatisfaction arising from these "swaps."

WANTED.—To exchange 100 Heddon brood-chambers (new) frames, all wired; 10 lbs. foundation for same, and 11 queen-excluding honey-boards, for Cypher's incubator or thoroughbred poultry
FRED. HOLTKE, No. 7 Pine St., Newark, N. J.

WANTED.—A place as assistant with some bee-keeper; have had some experience in keeping bees; have good habits. I am 29 years old; can give references as to character.
W. M. CRUTCHER, 214 Date St., Jacksonville, Fla.

WANTED.—To exchange modern guns (breech-loading) for old flint-lock guns and fine-type muzzle-loaders, and old-style 8 day clocks with moon and date. W. S. AMMON, 216, 218 Court St., Reading, Pa.

WANTED.—Star, Barnes, or similar lathe. I have to exchange for it, a Given foundation-press, camera, Lamb knitting-machine, phonograph, graphophone, or magic lantern.
L. HEINE, Bellmore, Nassau Co., N. Y.

WANTED.—I expect to handle bees the coming season for share or salary; 15 years' experience.
THOS. ELLIOTT,
Adams House, 39 W. Adams St., Chicago, Ill.

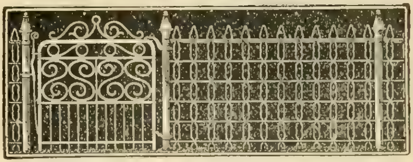
WANTED.—To exchange a Root 10-in. foundation-mill and money for second-hand chaff hives, either one or two stories.
A. MOTTAZ, Utica, La Salle Co., Ill.

WANTED.—A young man, or man and wife, to keep my bees on shares, on the west side of the Mississippi; good pasture. I have an extractor and necessary tools. Correspondence solicited.
R. J. MATHEWS, Rosedale, Miss.

WANTED.—A good man, with family, who understands bee and poultry keeping, and do some farm work; work to be done on shares.
JOHN IFFT, Zelienople, Pa.

WANTED.—To exchange a small farm (40 acres) and apiary (99 stands), see July 1st GLEANINGS. Two immense beet-sugar factories located in our county since then. Will sell together or separate.
J. B. COLTON, La Junta, Col.

HARTMAN STEEL ROD PICKET FENCE



fills completely all fence requisites as to beauty, utility and durability. Specially designed for lawns, parks, cemeteries, school grounds, &c. Looks best and is best when built with our steel posts. Illustrated catalog free.
HARTMAN M'F'G CO., BOX 80 ELLWOOD CITY, PA.
Or 40 BROADWAY, NEW YORK CITY.

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$34 **BUILT for SERVICE**

We Ship Direct to the consumer At **Lowest Wholesale Prices** the most reliable line of vehicles, etc. to be found anywhere. Built substantially of honest material—workmanship the best—one of them will outlast two of the ordinary kind—**Guaranteed** as represented or your money back.

We will ship C.O.D. with privilege of examination. You risk nothing. Reliable Top Buggy, **$34.00;** fine spring Wagon, **$39.00;** strong two horse Farm Wagon, **$44.00;** handsome Surrey, **$54.00;** well made Portland Cutter, **$17.25;** Carts, **$9.50** up. Single harness **$4.50;** Farm harness, **$12.95.** Send for free illustrated catalogue.

CASH BUYERS' UNION, 158 W. VanBuren St., B-345, Chicago

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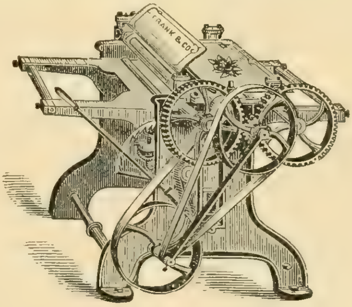

PLANERS

The above cut shows one of our small Planers, of which we make twelve different styles and sizes. Also large Planers, Band Saws, Buzz Planers, Moulders, Wood Lathes, and all kinds of

WOOD WORKING MACHINERY

Send for Catalogue.

The FRANK MACHINERY CO.

BUFFALO, N. Y.

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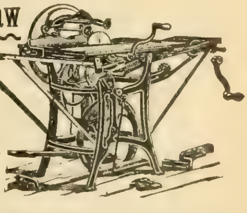

Union Combination Saw

For Ripping, Cross-cutting, Rabbeting, Mitering, Grooving, Gaining, Boring, Scroll-sawing, Edge-moulding, Beading. Full line **FOOT** and **HAND POWER** machinery. *Send for catalog A.*
SENECA FALLS MFG. CO.
44 Water St., Seneca Fs., N. Y.

WANTED.—To sell 4 60-lb cans of pure alfalfa honey from brand-new combs, for 8½ cts. aboard cars here.
L. H. GREENE, Berthoud, Col.

SEED DUE BILL FREE

To get new customers to test my **Seeds**, I will mail my **1900 Catalogue**, filled with more bargains than ever and a **10c Due Bill** good for **10c worth of Seeds** for trial **absolutely free.** All the **Best Seeds, Bulbs, Plants, Roses, Farm Seeds, Potatoes, etc.**, at lowest prices. **Nine Great Novelties** offered without names. I will pay **$50. FOR A NAME** for each. Many other novelties offered, including **Ginseng**, the great money making plant. Over 20 varieties shown in colors. **$1100 in cash premiums offered.** Don't give your order until you see this new catalogue. **You'll be surprised** at my bargain offers. Send your name on a postal for catalogue today. **It is FREE to all.** Tell your friends to send too.

F. B. MILLS, Box 105 Rosehill, Onondaga Co., N. Y.

writing, mention GLE

REGISTERED WAB TRADE MARK

Burpee Seeds are sold in any quantity, but only under seal. They are always genuine as *dated*, and are fairly described in

BURPEE'S FARM ANNUAL FOR 1900.

This is a bright new book full of practical information, which we are pleased to **mail free** to progressive planters, who desire to raise the choicest Vegetables or most beautiful Flowers. **Write To-day.**

W. ATLEE BURPEE & CO., Philadelphia.

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Have Hundreds of Carloads

of Fruit and Ornamental Trees, Shrubs, Roses, Plants, Bulbs, Seeds.

Choicest new and old. Mail size postpaid, safe arrival and satisfaction guaranteed, larger by express or freight. The best are cheapest. Try us. Elegant Catalogue free. 46th year. 1000 acres. 44 greenhouses.

THE STORRS & HARRISON CO.,
Box 742, PAINESVILLE, OHIO.

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FERRY'S SEEDS

Thousands of gardeners depend on Ferry's Seeds every year and never suffer disappointment. Cheap substitutes bring loss, not paying crops. It pays to pay a little more for FERRY'S SEEDS. Five cents per paper everywhere, and always worth it. **Always the Best.** 1900 Seed Annual free.

D. M. FERRY & CO., DETROIT, MICH.

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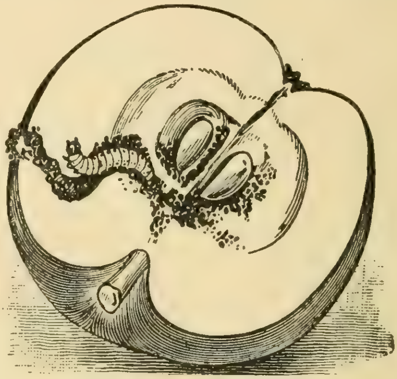
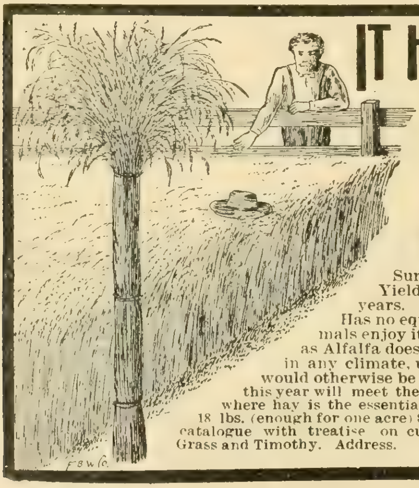
SPRAYING FRUIT-TREES.

The question of spraying fruit-trees to prevent the depredations of insect pests and fungus diseases is no longer an experiment but a necessity.



Our readers will do well to write Wm. Stahl, Quincy, Ill., and get his catalog describing twenty-one styles of Spraying Outfits and full treatise on spraying the different fruit and vegetable crops, which contains much valuable information, and may be had for the asking

IT HOLDS UP YOUR HAT



Don't you remember how your father used to test his grass and grain in this way? When it held up the hat it was always regarded as being a satisfactory and profitable "stand."

...THIS...

BROME GRASS

Surpasses Timothy in nutrition. Outyields Alfalfa. Yields four to five tons per acre. One sowing lasts 12 years. Grows well in light soil, or wet swampy land. Has no equal for arid regions. Drouth will not kill it. Animals enjoy it green or dry. Gives as much food in one month as Alfalfa does in three. Greatest boon ever offered as it thrives in any climate, under any conditions and makes productive what would otherwise be waste land. It is doubtful if the supply of seed this year will meet the demand, so great is the call already from States where hay is the essential crop. Price: Grade A—1 lb., 30c; 3 lbs., 85c, prepaid. 18 lbs. (enough for one acre) $3.60; 100 lbs., $18.00. Send for mammoth descriptive catalogue with treatise on cultivation and comparative food values of Brome Grass and Timothy. Address.

L. L. MAY & CO., Seed Growers, ST. PAUL, MINN.

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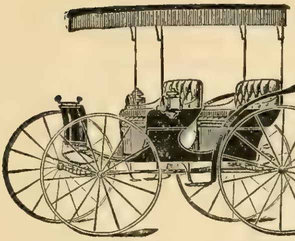

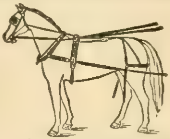

Dont Take Any Chances

on an inferior vehicle or harness. Your life and that of your family depends upon their quality and reliability. You can t tell very much about the quality of a vehicle by simply looking at it. The paint and varnish effectually hides the quality of material. Vehicles must be bought largely on faith—faith in the honesty of the manufacturer.

WE HAVE NO AGENTS

but have been selling vehicles and harness direct to consumers for twenty-seven years. **In fact we are the largest manufacturers of vehicles and harness in the world selling to the consumer exclusively.** These facts speak volumes for the quality of our goods and our method of doing business You take no chances; we ship our vehicles and harness anywhere for examination and guarantee everything. **Send for our large Illustrated Catalogue before buying. IT'S FREE.**

No. 606 —Canopy-Top Surrey, with side curtains, fenders, lamps, storm apron, sun shade and pole or shafts. Price, $63. As good as sells for $35 more.

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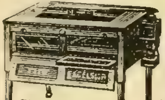
—The sure result of feeding **Green Cut Bone.** You can cut it **fast, fine and easier** with the **original MANN'S NEW BONE CUTTER** than in any other way. Doubles the egg crop winter and summer. Next to this and ahead of all others is Mann's Clover Cutter, that does cut—not a plaything. Grit and Feed Trays too. Catalogue Free. **F. W. MANN CO., Box 37. Milford, Mass.**



HATCH CHICKENS BY STEAM—with the simple, perfect, self-regulating **EXCELSIOR INCUBATOR**

Thousands in successful operation. Lowest priced 1st-class hatcher made.

Circulars free. Send 6c. for Illus. Catalog

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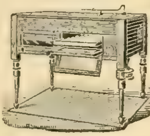

Strong, Healthy Chicks

are hatched by our incubators, and more of them than hens can hatch. Why? Because our regulator never fails to keep the **heat just right. Catalogue printed in 5 languages** gives full descriptions, illustrations and prices, and much information for poultry raisers. **Sent for 6 cents.**

DES MOINES INCUBATOR CO.,
Box 503 Des Moines, Ia.

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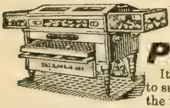
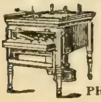


A SONG OF SUCCESS

would make another good name for our ***20TH CENTURY POULTRY BOOK***

It deals with all those subjects which tend to success in the poultry business, treated by the masterful hand of experience. No subject neglected, it hits them all. It's practical; can be adopted by everybody in the poultry business. Tells about the renowned **Reliable Incubators and Brooders.** Book sent for 10c to cover postage **Reliable Incubator & Brooder Co., Box B 49, Quincy, Ill.**



310 First Premiums

Awarded to the **PRAIRIE STATE INCUBATOR.** Guaranteed to operate in any climate. Send for catalogue.
PRAIRIE STATE INCUBATOR CO. Homer City, Pa.

REID'S Fruit Trees, Small Fruits, Roses, Ornamental Trees and Plants true to name. Low prices. No. 1 stock. Illustrated catalog free. **FRUITS**

REID'S NURSERIES,
Box 18, Upland, Ohio.

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50c. SEED DUE BILL FREE

Send me today, your name and address, on a postal and I will mail you **free,** my Handsome Illustrated Seed Catalogue containing **Due Bill** and plan **good for 50c. worth of Flower or Vegetable Seeds Free.** Your selection, to introduce the

Best Northern Grown Seeds,

DIRECT FROM GROWER TO PLANTER,

from Saginaw Valley Seed Gardens. Seed Potatoes, Vegetable, Flower, Field Seeds and Plants.

100,000 Packages Seeds FREE

on above plan. Write quick. Send names of your neighbors who buy seeds. $100 cash for best list. See catalogue.

HARRY N. HAMMOND,
Seedsman, *Box 69.* ***Fifield, Mich.***

15 CTS. FOR A POSTAL

We have published this year the finest catalogue of seeds, plants, etc., ever issued by any western dealer. 100 pages, hundreds of illustrations, elegant colored plates, truthful descriptions and **BARGAIN PRICES.** These books are expensive, costing us about **15 cents each,** but we will mail one to you **FREE** if you mention this paper. A postal request is sufficient. Better write for it today.

IOWA SEED CO., DES MOINES, IOWA.

American Poultry... Journal... 25c 1 Yr.'s Trial Subscription 25c

AMERICAN POUTLRY JOURNAL,
— Room 500 —
325 DEARBORN STREET, CHICAGO.

Our $4,000 Book Is now Ready. It costs you only ***15 cts.***

192 pages. 8x11 inches. Articles written expressly for it by leading poultry authorities of the world. Handsomely illustrated. Justifies its title ***"How to Make Money with Poultry and Incubators."*** Tells about the

Cyphers Incubator Warranted to last ten years without repairs, and to out hatch any other machine, during three trials. bar none. 16-page circular free. Send 15c. in stamps for $4000 Poultry Book No 74. Address nearest office.

CYPHERS INCUBATOR CO.,
CHICAGO, ILL. WAYLAND, N. Y. BOSTON, MASS.

In writing, advertisers mention Gleanings.

THE Bee-keepers' REVIEW

For January has a five-page article by Miss Pickard, of Wisconsin, on the production of extracted honey. She begins with taking the bees from the cellar, and goes over the whole ground thoroughly, until the bees are again placed in the cellar. The frontispiece shows her out-apiary, with wooded hills for a background, and a little brook in the foreground. There is a portrait of Miss Pickard, a picture of her bee-brush—the best thing of the kind that I have ever seen, also a picture of her wintering-cellar with the boys carrying in the bees.

Mr. R. L. Taylor shows why Dr. Miller's experiment did not prove that bees, when deprived of their queen, always choose young enough larvæ for queens, when such are present in the hive at the time of the choice.

Ira Barber tells of the wonderful distances that bees can fly in gathering nectar, and yet store large quantities.

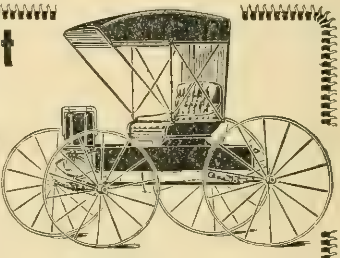
Next month Herbert Clute of Wisconsin will describe (and the frontispiece will illustrate) his apiary, honey-house, bee-cellar, and methods of extracted honey production.

The Review is progressive, wide awake, up-to-date, and always on the lookout for new correspondents and new ideas. Send $1.00 for the Review for 1900, and 12 back numbers will be sent free. For $2.00 I will send the Review for 1900, the back numbers, and send you a queen of that superior stock next spring.

W. Z. HUTCHINSON, Flint, Mich.

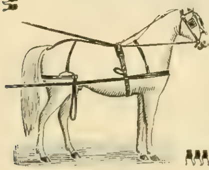
Where Can I Get The Best

VEHICLES AND HARNESS FOR THE LEAST MONEY?



That is a question of greatest importance to the buyer. We believe we are in a position to answer by saying right here at our factory: **Why?** Because we control every element of manufacture as to price, quality, style and finish. We

GUARANTEE EVERY ARTICLE



we sell and ship our goods anywhere subject to examination by the purchaser. If goods are not found as represented and entirely satisfactory, return them and we will refund your money, We really sell you vehicles and harness **at less than wholesale prices** because we save all traveling men's expenses, commission to agents and dealers, loss on bad accounts, etc Large illustrated catalogue **FREE.**

Kalamazoo Carriage and Harness Co., Box 22 Kalamazoo, Mich.

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DO YOU WANT TO MAKE SOME MONEY?

OUR PRIZE-WINNING White Leghorns, Barred and Buff Plymouth Rocks, Buff Cochins are money-makers. Utility and fancy combined. Friends, they will help to lift that mortgage. One thousand fine birds for sale at reasonable prices. Satisfaction guaranteed. Catalog free.

CRESCENT FARM, : BOX W, KENT, OHIO.

E. T. BLOOD, MANAGER.

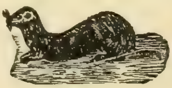
Olive Oil. This oil is of fine quality, and guaranteed absolutely pure; try it. Extracted by myself. Case of 2 doz. bottles—2 gals.—$10.00; case of 1 doz. bottles—2 gals.—$9.50; case of two 1-gal. cans, $8.50. All f. o. b. here. Sample on application, 15c. **A. B GURR, Merced, Cal.**

BEES AND QUEENS.

Either Golden Italian, 3-banded Italians, or Holy Lands, your choice. Nothing but the best of stock bred in 3 different yards, several miles apart. Send for circular and price list. It gives methods of queen-rearing, honey production, etc. Prices, either race: Untested, March, April, and May, $1 00 each; 6 for $5 00; per dozen, $9 00. Tested, $1.50; 6 for $8.00; per doz., $15.00. Untested, June, July, Aug., and Sept., 75c; 6 for $4 25; per doz., $8.00. Tested, $1.25; 6 for $6 75; per doz., $12.00. Special discount in large quantities. Breeding queens a specialty.

O. P. HYDE & SON, Hutto, Texas.

1200 FERRETS FOR SALE. Small, medium, and large sized; some trained. **First-class** stock. New price list free



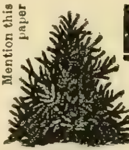
N. A. KNAPP,
Rochester, Lorain County, Ohio.

REMOVED!

EARLY QUEENS. W. H. Laws has removed his entire queen-rearing apiaries to Round Rock, Texas, where he will be better fitted than ever to fill orders for the LAWS strain of FAULTLESS 5-BANDED bees the coming season. BREEDING QUEENS always on hand. Price $2 50 each. I am also breeding the leather-colored stock from imported mothers. Tested queens, either strain, $1 00; 6 for $5.00; untested, 75c; 6 for $4.00. Queens ready in season.

W. H. LAWS, Round Rock, Texas.

Mention this paper



EVERGREENS

Hardy Sorts, Nursery Grown. Millions to offer. **6 to 8 in $1; 12 in. $3; 2 to 3 ft. $10** per 100 prepaid: **4 to 6 ft. $20** per 100. **50 GREAT BARGAINS** to select from. Forest and Fruit Trees, Vines, etc. Send for free catalogue. **LOCAL AGENTS WANTED.**

D. HILL, Evergreen Specialist, Dundee, Ill.

In writing, mention Gleanings.

1881 **PAGE & LYON MFG. CO.** 1900

We manufacture a full line of the latest BEE-SUPPLIES.

Our motto is, "Perfect Goods and Prompt Shipment."

Send for our new free illustrated catalog.

PAGE & LYON MFG. CO., New London, Wisconsin.

Honey-jars!

One-pound square, $4.70 per gross, with corks. Five gross at $4.50 per gross. These are perfect flint jars, not seconds.

Comb Foundation

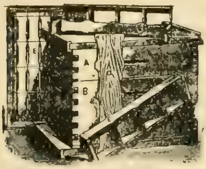
Wholesale or retail. If you are a dealer, or can use or sell a quantity, we will be pleased to send you our special price list via "Uncle Sam's Route." Catalog of popular supplies free.

I. J. Stringham, 105 Park Place, New York.

Marshfield Manufacturing Company.

Our specialty is making SECTIONS, and they are the best in the market. Wisconsin basswood is the right kind for them. We have a full line of **BEE-SUPPLIES.** Write for free illustrated catalog and price list.

Marshfield Mfg. Co., Marshfield, Wis.



HONEY MONEY results from the best care of the bees. That results from the use of the best Apiary appliances. **THE DOVE-TAILED HIVE** shown here is one of special merit. Equipped with **Super Brood chamber, section holder, scalloped wood separator** and **flat cover.** We make and carry in stock a full line of **bee supplies.** Can supply every want. Illustrated catalogue **FREE**

INTERSTATE MANFG. CO., Box 12, HUDSON, WIS.

COMB FOUNDATION.....

Made by a new sheeting process of my own which produces a clear, transparent, and pliable foundation, that retains the smell and color of wax.

WORKING WAX INTO FOUNDATION FOR CASH A SPECIALTY. BEESWAX WANTED.

I also carry a full line of Supplies, and can furnish any thing in any quantity at bottom prices —Wholesale and Retail. Send for 1900 catalog, and let me know your wants.

GUS. DITMER, AUGUSTA, WIS.

For Sale.—Several hundred pounds of well-ripened basswood honey in 60-lb. tin cans. Write for prices.
Ed. Wilkinson, Wilton, Wis.

FACTS About Bees.

REVISED EDITION.

How to get

GILT-EDGED HONEY

Send 2c stamp to

THE A. I. ROOT CO., Medina, Ohio,

or F. Danzenbaker,
Box 66, Washington, D. C.

Root's Goods in Kansas.

Carl F. Buck, Augusta, Butler County, Kansas.

ROOT'S : BEE : SUPPLIES

for Maryland, Delaware, Virginia.

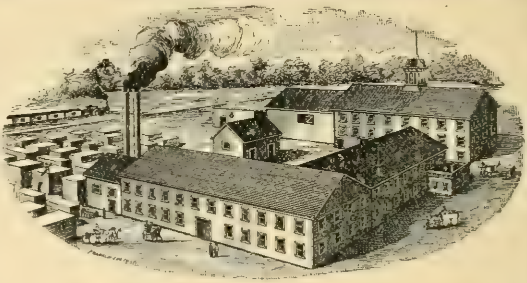
Rawlings Implement Co., - Baltimore, Md.

For Sale.—Extracted basswood honey, 8¾ cts. per lb.; sample 5c.
I. J. Stringham, 105 Park Place, New York.

BEE-SUPPLIES!

We have the best-equipped factory in the West. Capacity, one carload a day; and carry the largest stock and greatest variety of every thing needed in the apiary, assuring BEST goods at the LOWEST prices, and prompt shipment. We want every bee-keeper to have our FREE ILLUSTRATED CATALOG, and read description of Alternating Hives, Ferguson Supers, etc. *Write at once for a catalog.*

We also manufacture TANKS of either wood or galvanized steel, all sizes, any form, and for all purposes. Price list free.



E. KRETCHMER, Red Oak, Iowa.

PRICES OF

Bingham Perfect Bee-smokers and Honey-knives.

Smoke Engine (largest smoker made.)	4-inch stove.	Doz.	$13.00;	each, by mail,	$1.50
Doctor	3½-in.	"	"	9.00;	"	1.10
Conqueror	3-in.	"	"	6.50;	"	1.00
Large	2½-in.	"	"	5.00;	"	.90
Plain	2-in.	"	"	4.75;	"	.70
Little Wonder (wt. 10 oz.)	2-in.	"	"	4.50;	"	.60
Honey-knife			"	6.00;	"	.80

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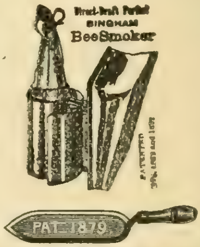
January 27, 1897. Truly, W. H. EAGERTY, Cuba, Kansas.



Bingham & Hetherington Uncapping-knife.

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$1900, A.D. 1900,

will not buy my 500 colonies of bees, but am ready to furnish good Italian queens

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1 Untested Queen, $1.00; 6 for $5; 12 for $9.
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1 Best Breeder, $4.00.
Nuclei, $1 to $10 in season.

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W. W. Cary,
Lyonsville, Mass.

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Honey Column.

CITY MARKETS.

SCHENECTADY.—There is now but very little comb honey on this market, and we are not able to fill present orders. No change in prices, but there is an improvement in demand. Extracted season not fully on yet, and market quiet.

Feb. 7. C. McCULLOCH, Schenectady, N. Y.

CHICAGO.—Trade is slow in comb honey; choice lots of white bring 15; that a little short of this grade, 13@14; ambers range from 10@12; dark, 8@10; no fancy lots on the market. Extracted, fancy white, 9; amber to white, 7½@8½; dark and buckwheat range about 7. Beeswax is selling on arrival at 28.

R. A. BURNETT & Co.,
Feb. 7. 163 S. Water St., Chicago, Ill.

DETROIT.—Fancy white, 15@16; No. 1, 13@14; amber, 11@13; dark and undesirable lots, 8@10. Extracted, white, 7@7½; amber and dark, 5@6. Beeswax, 25@26.

M. H. HUNT & SON,
Feb. 10. Bell Branch, Mich.

ALBANY.—Honey market is quiet, and firm at unchanged prices. If any have dark extracted on hand, we advise shipping promptly, as there will soon be a demand for it. Beeswax quiet, 25@27.

McDOUGAL & Co.,
Successors to Chas. McCulloch & Co.,
Feb. 9. Albany, N. Y.

BOSTON.—Our market on comb honey continues very dull; and while the supplies are not large, yet they are fully equal to the demand. Our nominal market is 18; but these prices can be shaded where an actual purchaser is found. We think the lack of demand is caused largely by the difference between price of this year and previous years. Extracted honey sells in better demand at 7½@7¾.

BLAKE, SCOTT & LEE,
Feb. 6. 33 Commercial St., Boston, Mass.

COLUMBUS.—Market remains stationary. Demand light. Fancy white, 16; amber, 12. We are in the market for some fancy white. EVANS & TURNER,
Jan. 29. Fourth and Town Sts., Columbus, O.

NEW YORK.—During the past thirty days our market has been somewhat slow and easy in both comb and extracted honey. Stocks of comb honey, however, are almost exhausted, and there is a fair demand for all grades. Fancy white sells at 15; No. 1 white, 13@14; fancy amber, 11@12; buckwheat, 9@11, according to quality. Beeswax, 26@28. Any one having any comb honey left had better market it now while there is a demand. Our market is well supplied with extracted, though prices are firm and unchanged.

HILDRETH & SEGELKEN,
Feb. 8. 120, 122 West Broadway, New York.

MILWAUKEE.—The market here on honey is very slow indeed. The demand is confined to the local consumers, and orders are not coming in very lively. The supply is only moderate, yet enough for the present demands. Very soon there should be an improved demand, and the stock will soon be absorbed; and any shippers who may have shipments, we would advise them to send here soon. We continue to quote fancy 1-lb. sections, 15@16; A 1, 1-lb. sections, 14@15; No. 1, 1-lb. sections, 13@15; amber or dark, 1-lb. sections, 12@14. Extracted in barrels, kegs, and pails, white, 8½@10. Beeswax, 25@26. A. V. BISHOP & Co.
Feb. 6.

PHILADELPHIA.—Bee-men are just wakening to the fact that they have some honey to sell that they can't sell at home, and are pushing it into the market; it arrives in bad condition, and sells for a low price. We find honey coming from quarters we never dreamed of. Prices are lower all along the line. Comb, fancy, none; No. 1, 13; No. 2, 11. Extracted, 6@8. Beeswax, higher, and in demand at 28. We are producers of honey—do not handle on commission.

WM. A. SELSER,
Feb. 8. 10 Vine St., Philadelphia, Pa.

BUFFALO.—The demand for honey is good, a little more coming forward than there was, but the prices are no lower. Fancy, 15@16; A No. 1, 14@15; No. 1, 13@14; No. 2, 11@12; No. 3, 10@11; fancy dark, 11@12; good dark, 10@11. Extracted white, 8@8½; dark, 7@7½. Beeswax, 28@30. W. C. TOWNSEND,
Feb. 12. Buffalo, N. Y

FOR SALE.—Several hundred pounds of extracted (basswood) honey in 60-lb. tin cans. One or more cans at 8 cts. per lb., f. o. b. cars here.
ED. WILKINSON, Wilton, Wis.

WANTED.—Comb and extracted honey. State price, kind, and quantity. BLAKE, SCOTT & LEE,
33 Commercial St., Boston, Mass.

WANTED.—Your honey. We will buy it, no matter where you are. Address, giving description and price.
THOS. C. STANLEY & SON, Fairfield, Ill.

WANTED.—Comb and extracted honey. State price, kind, and quantity. R. A. BURNETT & Co.,
163 South Water St., Chicago, Ill.

FOR SALE.—Extracted basswood honey, 8¾ cts. per lb.; sample 5c.
I. J. STRINGHAM, 105 Park Place, New York.

WANTED.—To sell 4 60-lb cans of pure alfalfa honey from brand-new combs, for 8½ cts. aboard cars here.
L. H. GREENE, Berthoud, Col.

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[Established in 1873.]

Devoted to Bees, Honey, and Home Interests.

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J. W. Bittenbender, Knoxville, Iowa.

Wants and Exchange.

Notices will be inserted under this head at one-half our usual rates. You must SAY you want your ad. in this department, or we will not be responsible for any error. You can have the notice as many lines as you please; but all over ten lines will cost you according to our regular rates. We can not be responsible for dissatisfaction arising from these "swaps."

WANTED.—To exchange 100 Heddon brood-chambers (new) frames, all wired; 10 lbs. foundation for same, and 11 queen-excluding honey-boards, for Cypher's incubator or thoroughbred poultry.
FRED. HOLTKE, No. 7 Pine St., Newark, N. J.

WANTED.—To exchange modern guns (breech-loading) for old flint-lock guns and fine-type muzzle-loaders, and old-style 8 day clocks with moon and date. W. S. AMMON, 216, 218 Court St., Reading, Pa.

WANTED.—A young man, or man and wife, to keep my bees on shares, on the west side of the Mississippi; good pasture. I have an extractor and necessary tools. Correspondence solicited.
R. J. MATHEWS, Rosedale, Miss.

WANTED.—A young man with small family, who understands bee-keeping. Must be of good character. Good place for the right man.
S. M. ALEXANDER, Kearney, Neb,

WANTED.—To exchange bees for thin foundation.
D. F. LASHIER, Hooper, N. Y.

WANTED.—Position with bee-keeper or fruit-grower. Some experience; good references as to industry and character; young man; single.
NEWTON FOSTER,
Kimbrough's Store, McMinn Co., Tenn.

WANTED.—To exchange a good Oregon farm of 82 acres for a farm or home of some kind in Virginia, Maryland, or Delaware, for the purpose of raising bees. I am too old and worked out to care for this.
F. R. FRENCH, Dover, Oregon.

WANTED.—To exchange No. 1 Star sweep feed-mill, 2-horse, good as new, for rifle, shot-gun, bicycle, or offers.
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WANTED.—To purchase a second-hand Barnes saw in good condition.
E. B. ROOD, Braidentown, Florida.

WANTED.—Correspondence with a young man desirous of going west, seeking employment, who understands bees and gardening.
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WANTED.—Bees and bee-goods, or whatever you have, for an improved lot at Keuka, Putnam Co., Fla. From the lot can be seen a store, church, schoolhouse, railroad station, postoffice, and a fine view up Lake Keuka. The lot fronts on the street, and runs down to the lake front. I have wanted $300 for it, but will take less if I can get bees and bee-goods by March 30. Make an offer. DR. BALL, Litchfield, Ct.

$5.00 for an Article.

For the best article received before March 31, for publication in the April Review, I will pay $5.00 cash. For each article, aside from the prize-article, that is accepted, I will send the Review for 1900, and one of those Superior Stock Queens.

Please use black ink, on good white paper, and write on only one side of the paper. At the top of the first page write "For the Prize-competition," and write your name and address at the bottom of the last page.

The style in which the article is written, and its length, will have little influence in the making of the award. What is wanted is such information as will aid a bee-keeper in making his business more safe, pleasant, and profitable; in other words, preference will be given to practical articles, that is, those that tell "how to do things"

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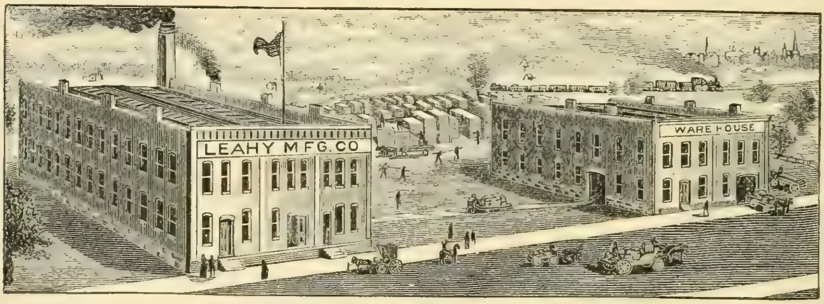

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A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS.

ILLUSTRATED SEMI-MONTHLY

Published by THE A. I. ROOT CO.
$1.00 PER YEAR MEDINA, OHIO.

VOL. XXVIII. FEB. 15, 1900. NO. 4.

STRAY STRAWS FROM DR. C. C. MILLER

CHICAGO, Aug. 28, 29, 30. That's where and when the big convention will be.

IF YOU SHOULD happen to be in Paris Sept. 10, 11, or 12, don't forget to drop in at the World's Congress of bee-keepers that will be in session at that time.

HONEY extracted from combs in which generations of bees have been reared will granulate much sooner than that from new combs. So says *Elsass-Lothringischer Bienen-Zuechter.*

DR. DUBINI, when in Greece, visited Mt. Hymettus purposely to sample on the spot the famed Hymettus honey. He found it pretty poor stuff. The honey-plants are perhaps quite different from those of antiquity.—*Imkerschule.*

IT COSTS to exhibit at the Paris Exposition. *Die Bienenpflege* inquired what it would cost for books, and was told an exhibitor would pay $2.00 for each volume after five volumes, but $10.00 for the first five, and $10.00 if he had only a single book.

THE NUMBER of big bee-keepers (Grossimker) in Switzerland, according to the *Luxem. Bztg.*, is 1028. Of these, 535 have more than 25 colonies each; 333, more than 35; 105, more than 50; 24, more than 75; 18, more than 100; and 8, more than 150; the very biggest having 251 colonies.

SPEAKING of phonetic spelling, Editor Hutchinson says: "Asking readers to vote upon a subject, after the editor has expressed *his* opinion, is not a very sure way of learning the wishes of the majority." After seeing last GLEANINGS, he will probably retr—er—that is—say something further about it.

PROF. GASTON BONNIER put a cushion 2¾ inches thick, packed with oat chaff, over a colony, and measured the volume of air that passed up through the cushion. When the difference between the outside air and the air in the hive was 16°, 353 quarts of air passed through in an hour; when 28°, 545 qts.; when 37°, 701 qts.; when 45°, 865 qts. The current was about twice as strong without the cushion.

THAT ARTICLE of J. E. Crane, p. 79, would add thousands upon thousands of dollars to the wealth of the country if it could be thoroughly understood by all fruit-growers. I knew in a rough way something of the facts he gives, but never so fully and clearly. In time the truth will percolate through the fruit ranks.

A FRENCH JOURNAL says Mr. Richardson in California in 1897 got 65,000 tons of honey from 1000 colonies! That's 130,000 pounds per colony. A story doesn't lose by travel. [The mistake above probably occurred from the word *tons* being made to follow the numerals. If, therefore, the 130,000 lbs. per colony be divided by 2000, we shall probably get very close to the actual figures.—ED.]

THERE SEEMS to be a prevailing opinion that in buckwheat regions people like buckwheat honey because they get used to it. There's much in that; but it will be probably found that everywhere there are buckwheat tastes, only it isn't known so well where buckwheat is little grown. Buckwheat honey is little known here, but I've known several with a strong preference for buckwheat honey.

YOU'VE SEEN a cell entirely filled with honey, but you never saw one filled with pollen, did you? A. Astor (*Revue Int.*) says it's because the bee must have room to stick its legs in the cell to kick off the pollen. Incidentally, I suppose it's a good thing to have space for a covering of honey to preserve the pollen. [This is an interesting observation; but incidentally I can not help noting that the doctor has learned to talk like the rest of us. You will remember that he insisted that a worker-bee should be designated by the feminine pronoun. But note how nicely he falls in line when he speaks about how the worker sticks *its* legs into the cell.—ED.]

THE *Leipziger Bienenzeitung* reports that some foundation made of pure wax ten years old was very brittle. A few drops of linseed oil were mixed with the melted wax, and then the foundation was all right. [I am not surprised that foundation ten years old should be brittle—at least if it were of the old process, which it undoubtedly was; but if the foundation under consideration was melted up again, and then worked up again into foundation, it would be soft and pliable whether linseed oil were melted up with the wax or not. I am of the opinion that linseed oil had nothing to do with it. Any thing of an oily nature should be left out of the wax, otherwise the bee-keeper will have a mess on his hands some day when the weather is pretty warm.—ED.]

THE BUSY BEE well deserves its name. A. Astor fed a marked bee which worked from 6 A. M. till 5 P. M., making 110 trips a day, and kept it up for 12 days. But it aged terribly in that time.—*Revue Int.* On the other hand, Prof. Hodge's bees worked only 3½ hours a day. [Now, if we had a national experiment station, or experiment station of any kind, in this country, making bee-keeping a specialty, here would be a nice field for investigation; and there would be something practical to be learned from it too. For instance, what strain of bees make the greatest number of trips in a day? and does the amount of honey depend on the number of trips? Perhaps some bees have larger honey-sacs as well as longer tongues.—ED.]

ALEX. ASTOR reports in *Revue Internationale* that a bee fed very thick honey took more than three times as long for the round trip as when fed equal parts honey and water. Given its choice, it took the thin every time. He says robbers prefer the thin—gain time in the long run. [I always supposed the reason why bees preferred thin nectar or thin honey or thin syrup was because they could then ripen or digest it more than where it was more nearly of the consistency of ripened honey. Indeed, we do know that syrup almost as thick as honey will be syrup still when stored in the comb; but if, on the other hand, it stands in the proportion of 50 per cent water, the bees will convert it into what may be called a kind of honey, giving it that honey taste that leaves a smarting or burning feeling in the throat.—ED.]

SO MUCH is said in foreign journals about horseradish for stings, that those seeking a remedy might try it. It is even said that, by mashing the leaves and rubbing the juice on the hands, bees will not sting them. [The only effect that horseradish would have would be its strong odor, which odor might have a tendency to drive the bees away. It is well known that bees, when about to sting, very often hesitate, seeming to select a good tender spot. If the vulnerable parts were smeared with some strong pungent liquid, it might have a tendency to prevent a certain class of would-be stingers from accomplishing their purpose. But nothing in the world would stop the onslaught of bees that are suddenly stirred up by a sudden snap or jar. It is *then* that they make a strike like a bullet, and hit the mark, odor or no odor.—ED.]

"THE NEXT THING we shall want to know is how to make extracted honey candy quickly," p. 91. Yes, that is a point that has been reached and discussed in Germany. To hasten granulation, stir occasionally. [At the Colorado convention it was mentioned that stirring did have quite an effect in hastening the candying of honey. If honey could be extracted from the combs without so much violent agitation, it would probably remain in the liquid form as long as that in the combs; for it is well known that honey in the comb will resist granulation much longer than that which has been separated by the extractor or by any other means known. So I think we may set it down as a fact that agitation is one of the prime causes of granulation; and the more we agitate, the sooner will it granulate. Another favoring condition is a freezing temperature for a given length of time.—ED.]

AT THE SUPPER-TABLE I read about W. L. Coggshall, p. 94, and ended by saying, "And a nice, pleasant man he is." At once came two voices, "Why, I thought he was a coarse, rough old fellow." I laughed. They had never seen W. L.'s genial face, and knew only that "kicking" story. [Human nature is inclined to remember the peculiar or striking features of a man or his methods; and the kick-off-super act of Coggshall seems to be the handle by which some of our friends hold him in mind. If so, I am responsible for making this feature prominent; and if I do not look out I am afraid my friend might practice his professional art on me the first time I go into his locality. Yes, indeed, Coggshall is a nice fellow; and with all his other good qualities he is exceptionally modest; and one who has had the experience he has, and runs as many colonies as he does so successfully, might be pardoned if he should attempt to teach bee-keepers at conventions some things they did not know before. But that is not his style. He has to be *drawn out*.—ED.]

THE EDITOR mentions, p. 90, a point too little noticed—10° above zero with a high wind is worse than 20° below without wind. That explains why a winter at Marengo is worse than in many places away north. Here the wind blows hard, not merely for a little while, but makes a steady business of it the whole enduring day. Some of you people don't know what a genuine windy day is. [Yes, indeed, there ought to be a great deal of emphasis placed on the fact that a high wind with a moderate amount of cold is much more destructive than a very low temperature below zero without wind. If this is true, it behooves us to put up windbreaks in the shape of high board fences or evergreen-trees. It will be remembered that the winter losses outdoors at Medina have been very low—scarcely ever exceeding 5 per cent, and usually about 2 per cent. Our apiary is shielded on the north and west sides by a solid phalanx of evergreen-trees from 20 to 30 feet high; and on the east and south by brick buildings and lumber-piles. The result is, that on the days of our highest winds there is comparative quiet in the apiary. True it is, there is a great roar of the wind from without, but there are only slight air currents within. A windbreak of evergreens does not cost much, and is perpetual after it is once put down. One consisting of a barn and out-buildings, with an occasional stretch of a board fence on the north and west sides, would be equally effective; and I am satisfied that the slight expense of maintaining the fence or trees would be made up in a few years' time, ten times over, in the saving of many colonies of bees, and preventing others from getting so weak that they are practically useless for honey production.—ED.]

"COLORADO isn't a good country for nervous troubles," p. 90. Nor for heart troubles—too high altitude. A little nephew born in Colorado had heart disease so bad that physicians pronounced his lease of life very short, and that he must never again be allowed active exertion. Came to Illinois—got strong. Went back to Colorado—disease returned worse than ever, and he died. [Yes, Colorado is a rather hard place for those who have heart troubles. While I believe I have normal health, and that my heart is normal, beating at 76 in Ohio, it ran up to 120 at an elevation of 9500 feet—nearly two miles—and in Denver the pulsations were about 100. Denver itself lacks about 15 feet of being 5280 feet (one mile) above sea-level. Central City, a mining town up in the heart of the Rockies, two miles above the level of the sea, that I visited, is a place I should not care to reside in very long. I experienced a shortness of breath that seemed almost suffocation; and how those people live there year after year, and how the horses and mules in that country can pull heavy loads over the mountains, without getting clear out of breath, is beyond my comprehension. But I suppose they get used to it, and think nothing of it.—ED.]

PICKINGS

FROM OUR NEIGHBORS' FIELDS.

BY STENOG.

Winter slowly wears away—
Skies are foggy, landscape gray;
Bees are flying round our head—
Tired, perhaps, of winter's bed.

* * *

"Modern Bee-keeping" is the title of a little book of 16 pages, by Gilbert Wintle, of Como, Quebec. It does not claim to be a hand-book on bee-keeping, but is simply an attempt to explain to outsiders something about what is certainly a most interesting industry. It is well written, and should have a wide circulation. It is sold at the nominal price of 10 cts., and can be had by addressing the Family Herald Pub. Co., Montreal, Canada.

* * *

We have just received from E. T. Abbott, of St. Joseph, Mo., a copy of the *Kansas Farmer* containing an address delivered by him before the Kansas State Horticultural Society, Topeka, Dec. 27, on the subject of bee-keeping in relation to fruit-raising. Mr. Abbott seems to have gone from A to Z in this matter, and, considering his audience, this essay can not fail to do great good. While there is much in it with which we are all familiar, there is much additional truth brought out, all going to show one thing—the great part bees do play in fertilizing fruit-blossoms, and the still greater part they may be caused to take in that work. Doubtless Mr. Abbott will furnish a copy to all applying; and to enable him to do so the address should be printed in pamphlet form.

* * *

Now for that recipe for making bird-lime. A friend asks why it is called "lime." It is probably a misspelling of the German word *leim*, meaning *glue*—a good deal on the principle that a German says *clay* when he means *clover*. Here is the recipe:

> There may be difficulty for some to make it, as it is made from the bark of the holly-tree, and that grows only in the South. First, peel the bark from the tree, and boil it soft; then strip the outside skin off, and throw it away. Bury it four days, after which beat it into a pulp. Wash clean, when it is fit for use. As to its use, smear a twig with the lime, and fasten it so the twig will drop. When the bird alights, the feet stick to the twig, and the wings get stuck so the bird can not get away, and is caught fast. The lime will keep for a year.

* * *

CANADIAN BEE JOURNAL.

> Men have been rejected in considerable numbers who sought enrollment in the U. S. army because they have what is called a "tobacco heart." There are many evil fruits which flow out of "small vices," unwisely adopted and needlessly continued.

That reminds me that there is now on my desk a copy of *The Australian*, giving two large half-tones of what is called Victorian Club Smoke Night. Describing it the editor says:

> The big room of the Vienna Cafe was far too small for the concert and smoke night of the old Church of England Grammar School boys and their friends on Thursday. A move was suggested to the Athanæum; but as pipes were going, and the "rosy" was already circulating, chairs were squeezed up, and the old boys sat literally shoulder to shoulder.

The whole thing is a swell drunk and smoke; and when we consider that it comes from one of the leading *religious* fountains of instruction of the English youth, it makes one wonder whether the church or the Boers are doing the most to rob England of her strength. The whole scene is below the plane of healthy savagery. Worse still, Queen Victoria detests tobacco, and will not have it around her. It is refreshing to think that some bee-keepers in Australia are not of that ilk.

* * *

BRITISH BEE JOURNAL.

With the death of Mr. Dickel's journal, his theory seems to have gone with it. The tenacity with which Mr. D. clung to his theory in the face of all opposition was worthy of a better cause. It stands opposed to parthenogenesis (virgin genesis), which may be defined as follows, according to the *British Bee Journal:*

> The queen, after she has once been mated, can lay at will two kinds of eggs—fertilized and unfertilized, the former of which produces females; the latter, males.

The Dickel theory is this:

> 1. The fertile queen-bee lays only fertile eggs, the fate of which depends solely upon the worker-bee, which alone has the power of determining the sex of the resultant insect. 2. This power is exercised

> through the medium of two pairs of glands, one pair of which secretes the needful element for the production of drones, the other that necessary to produce queens and workers only. The secretion referred to is supplied during the hermaphrodite stage of the larva, and continued until the commencement of the nymph stage, the ultimate determination of sex being brought about by the secretion of both these glandular forms. 3. In the case of unfertile eggs, that is, eggs laid by unmated queens or by "fertile" workers, only drones can result.
>
> These drones, however, are *abnormal*, and by no means the same as those produced from fertile eggs. The normal drone possesses, of course, perfect generative organs, but in the "abnormal" insect these are wanting. Up to the present no such distinction has been made.

The writer adds :

> All Dickel's experiments, as well as those of his supporters, are based upon abnormal circumstances, and therefore it requires only common sense to see that the queen, finding only drone-comb in her hive, laid worker-eggs as well as drone-eggs, and both were produced accordingly.

This will probably conclude the matter. The articles in question were written by Mr. R. H. Harris, F. Z. S., and his scientific examination of this strange theory has left no room for its further discussion.

AMERICAN BEE JOURNAL.

Mr. J. M. Donaldson relates his experience in trying to sell clover honey after buckwheat had preceded him on the same route. It contains some valuable hints.

> Last year a man came through this district selling buckwheat honey. It was a nice grade of comb honey, put up in cartons ; he was selling it very cheap, and disposed of quite a large quantity. Some of my customers did not forget to call my attention to the difference in his price and mine. One of them told me he would ruin my trade.
>
> I did not pay much attention to their remarks, as my crop was all sold, and I could not understand how he could hurt my trade, as he was selling buckwheat honey, and mine is from clover. But I soon learned my mistake, when I began selling my honey the past fall. One of the first houses I called at, I showed the lady a jar of extracted honey, telling her the price of the same. She said, "Our folks don't like strained honey. We always get ours in the comb."
>
> Then I showed her a nice, well-filled section. After examining it she said, "Well, that looks nice, and it is well filled, but we bought some last year that looked nice, and we could not eat it."
>
> I knew it would be useless for me to have her try the extracted honey, then explain to her that it was the same quality, so I passed on to the next house. One of my regular customers lived there, so I made a sale.
>
> But I had gone down the street only a short distance, when I received almost the same story as I did at the first house. This set me thinking. How could I overcome these arguments? I thought if I could let them sample the comb honey, the same as I do with extracted, all would be well.
>
> I was only three blocks away from home, so I went back and got some of my unfinished sections. I cut the honey out of one of them, placing it on a plate. I called at the same houses, and asked the ladies to sample my honey. The result was ready sales. I have used this plan since then, and I find it a great help, even when calling on my regular customers. When you give them a taste of honey (good honey) it seems to create a desire for more.

FERTILITY OF QUEENS.

When to Weed out Poor Queens; Queens from the Swarming Impulse.

BY F. A. SNELL.

It is a well-known fact to most bee-keepers that queens vary in prolificness, some being able to lay as many as 3000 eggs in 24 hours in the height of the breeding season, while other queens do not produce or deposit half that number under the same conditions, the queens being of about the same age. It is expected that queens failing from old age will not do so well. We may have two colonies side by side in the same apiary, equally strong in the spring. Later on we may see readily that one is outdoing the other, and becoming stronger. If the amount of worker comb is the same in one as in the other, and the supply of food about equal, no reason can be seen for this difference, providing the heat is retained by equal ventilation at the start. The only reason to be given for the better progress of one colony over the other must be in the two queens. One deposits eggs freely, and the workers hustle to care for the eggs and to develop this brood ; and in this hive every energy is bent toward rapid progress. In the other hive, fewer eggs and maturing brood are found in a less number of combs ; and if this colony becomes strong, the season may be advanced into June, or the surplus-storing season, before work can be commenced in the surplus apartment. The better colony will, by June 1, be a powerful one ; and when the flow for surplus begins, and the supers are put on, the bees are ready to rush into the supers and begin work there at once ; and when the first super is half or two-thirds full, a second one can be placed under the first provided with starters, and work will be commenced in this, and even a third super may be put on, and all be filled in a good flow from white and alsike clover bloom.

The colony with the poorer queen may or may not fill one complete super in the same time. This comparison is not drawn from fancy, but from observation and experience.

Now, the question arises as to cause and remedy in the case of the inferior colony. The cause is often in the rearing of queens when the conditions are such that good queens can not be reared. Good queens can not be rerred in a time of scarcity of honey and pollen in the fields. No wise apiarist will practice doing so. If the queen in a colony be lost any time during the working season, the bees of that colony will rear one in her place, be she good, fair, or poor. They will do the best they can under the circumstances. If the queen be inferior she should be removed and a good one given.

No better time can be found to rear queens than at swarming time. The apiarist should form nuclei, and save the queen-cells from the choice colonies. When the brood hatches, the purity, if Italians are bred, can be known; and if pure, the poor queens in the apiary can be superseded by these choice young queens. In our apiary we aim to rear enough such queens to replace all that do not please us each season, and a few extra ones. Nothing in the apiary pays any better than the labor spent in weeding out the poor queens and having good ones in all the hives. This is the only way that the standard of value can be raised in the apiary, and the maximum amount of honey secured.

Milledgeville, Ill.

New York Bee Disease, or Black Brood.

BY WM. R. HOWARD, A.B., M.D.

Fellow of the Texas Academy of Science, Professor Histology, Pathology, and Bacteriology, Medical Department, Fort Worth University, Fort Worth, Texas.

Author of "Foul Brood; its Natural History, etc.;" "Pickled Brood," and minor Papers on Diseases of Bees.

INTRODUCTORY.

In my investigations of this disease I have carefully examined each specimen separately, and noted the details in my laboratory note-book, from which extracts have been made. I have received specimens from Messrs. Geo. W. York, editor of *American Bee Journal*, Chicago, Ill.; E. R. Root, editor of *Gleanings in Bee Culture*, Medina, Ohio; N. D. West, New York State Bee Inspector, Middleburgh, N. Y.; and P. H. Elwood, Starkville, N. Y. All of these men have furnished, not only material, but have been active in getting data for the investigation. Mr. N. D. West has kindly written up the history of the disease as it appears in the apiaries which he has visited. Mr. P. H. Elwood has contributed his experience, as well as answered questions relative to certain points of interest. In making a report of the work and of the character of the disease, I have endeavored to write a complete history of its nature so far as is known, so that those who have not seen it may appreciate the work, and be able, possibly, to recognize it. I have drawn largely upon what these gentlemen have furnished, as well as from notes taken from my experience with the disease transferred by infected food to healthy bees in my own laboratory.

I have made more than one thousand microscopical examinations, and have given the results of those of the most practical importance, followed by a general summing-up of the facts, and the conclusions based upon them.

A differential diagnosis has been made between this disease and those of foul brood and pickled brood, considering most of the diagnostic points worthy of interest.

On account of the character of the dead brood; its beginning with a dark spot on the larva, which increases in size, becomes darker, and finally black, for convenience and brevity the name *black brood* has been suggested, and this name is used in the text.

In conclusion are given a few remarks upon the recurrence and treatment of this disease from a practical standpoint.

The drawings have been taken from my laboratory note-book, and were made from nature as the work was going on.

HISTORY.

From the best that can be learned of the first appearance of this disease, Mr. N. D. West, New York State Bee Inspector, writes:

"A Mr. Overbaugh, of Sloanville, N. Y., three or four years ago, bought ten nuclei from some man in Tennessee whose name and address have been forgotten. Of these nuclei, only seven were sent, which were found the same fall to be foul. They were allowed to stand, and robbers from neighboring colonies spread the infection. As nearly as I can learn, this infection has extended north twenty miles; west and south twenty-five miles.

"About the time apple-blossoms come in, this disease breaks out all at once and spreads with amazing rapidity. The young larva will have a yellowish speck on its body, about the size of a pinhead, while the older brood will stand out lengthwise in the cell, sharp at the ends; white, but not capped over; this brood dies, and is either removed by the bees, or, later, flattens down in the cell and becomes of a cream color, and, later still, a coffee-colored mass. Later in the season some brood that died in the cells, which had been capped over, becomes a rotten mass—a coffee-colored matter about the consistency of heavy honey. A toothpick dipped into this, and drawn out, causes this matter to stretch from half an inch to an inch, but does not break and fly back quickly as in foul brood. The smell is not very bad in any of the many cases I have examined this season. In some it has a sour smell, while in some of the sealed rotten coffee-colored brood it has a kind of rotten smell, but not like that of the old-time foul brood. There seems to be a level where bees either go down or get better, so that, later in the season, no diseased brood can be found. Where the

BACTERIOLOGIST DR. WM. R. HOWARD.

colonies are light with honey the disease seems to show more. This year I noticed a continual reappearance of bad brood from fruit-bloom to basswood-bloom, which yielded very little honey—only three or four days; and during this flow the bees pretty well cleared their combs of the bad brood. They were greatly encouraged, and reared some good brood with this new honey as a stimulus; but as this flow was soon over, there was an increase of bad brood, with no honey in the field. When buckwheat came into bloom, the bees again cleared their combs, so that in strong colonies it was difficult to find much of this bad brood. The combs were soon filled with honey and some good brood, the diseased brood having been removed either by the bees, or dried up in the cells, and covered with honey.

"I find that, if swarms that are affected are made strong with bees of all ages, they will largely do their own house-cleaning. I believe, too, that a supply of food should be given at a time of scarcity of honey in the field. I believe, also, that a season with a good continuous honey-flow will in part wipe out the disease.

"While many apiaries have been wholly ruined, yet those who have fought it have saved more or less bees. I have caused the bee-keepers to drive the bees out into new hives—McEvoy's method. Then in a great many swarms it starts up again, but they generally rear some good brood first. Where bees have passed a certain limit they should be placed on frames of comb foundation—McEvoy's method—and given bees enough by uniting to make them strong; and if no honey is in the field they should be fed.

"Mr. Julius Hoffman, after treating his bees in this way, noticed that the disease recurred. He sprayed them with a mixture of salicylic acid and syrup, in the proportion of one-fourth ounce of the acid in alcohol sufficient to dissolve it, four pounds of sugar, and one gallon of water. This was used twice, and when there was a dearth of honey in the field he fed this medicated syrup with ten pounds of sugar to the gallon. He boiled his hives in strong lye, and pronounced his bees free from disease. They were in the best condition of any in that neighborhood. He also used carbolic acid, making a weak solution, and saturated burlap, which he cut into pieces the size of the frames, and placed one on either side of the brood-nest between the division-board and the hive-body.

"Sometimes I find it in six or eight colonies, side by side, and sometimes it is confined to one end of the apiary. I account for this by bees entering the wrong hive."

Mr. P. H. Elwood, in a letter of Nov. 13, 1899, mentions the same fact. He says:

"It appears to be worse in spots in an apiary. We thought that this might be accounted for by bees getting into the wrong hives. It also seems to spread through the air." Mr. Elwood continues:

"It appeared here the spring before your article in the *American Bee Journal* [Sept. 10, 1896], diagnosing between foul brood and pickled brood. Until your article appeared I did not know what to call it, as it did not develop the characteristic odor, ropiness, etc , of foul brood. I called it, thereafter, pickled brood; and as it appeared in a more deadly form I called it malignant pickled brood. The specimen sent you is from a hive in which was as bad a case throughout the season as I have seen. It developed a sour penetrating smell that I could detect outside of the hive. As there is no young brood in the specimen it may require a more careful examination to discover it in its dormant form. I hardly believe that I am mistaken as to the disease having both a mild and a malignant form. What I call the malignant form may be altogether another disease. This is the opinion of some who hold that pickled brood is a forerunner of the other, but I think not.

"It seems to me that the adult bees are affected with this disease. In no other way can I explain the rapid weakening of the colony or the inability of the bees to gather honey."

In a subsequent letter (Dec. 12), in answer to some questions, he writes:

"In response to your questions I have been expecting to get some information from those

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EXPLANATION OF PLATE; MAGNIFIED 600 DIAMETERS—REDUCED.

Fig. 1.—*Bacillus milii.* *a*, spore formation, showing morphological changes, in agar-agar-plate culture; *b*, peculiar arrangement often noticed in cultures; *c*, isolated bacilli, floating in the liquids of the bee or in cultures; *d*, Zoöglea, showing the most common arrangement of the spores at the center, and the separation of the bacilli from the mass.

Fig. 2.—*Bacillus thoracis*, *a* showing rods arranged end to end as occurs in cultures; *b*, peculiar arrangement seen in agar-agar drop cultures, showing spores by fission; *c*, Zoöglea, showing common arrangement of the mass.

Fig. 3.—Mucor, *a* showing the spore-bearing heads; *b* showing these heads discharging the spores. Common on decaying matter.

Fig. 4.—*Aspergillus pollinis*, the fungus causing "Pickled Brood."

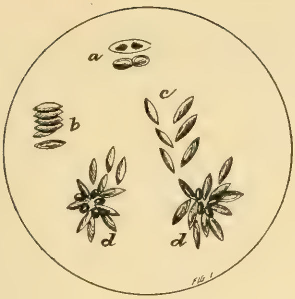
Fig. 5, *Fungi.*—*a*, *Hendersonia polycystis.* Fungus found on dead twigs, grasses, etc.; very common; *b*, *Dactylium roscum*, appears as pinkish roseate spots on decaying vegetation; very common; *c*, *Massaria*, var. *d* and *e*, fungi not common—not placed; unimportant.

Figs. 6 and 7, spore-bearing organs of fungi.

Fig. 6, *a*, transparent spore-receptacle intact; *b*, same, showing membrane ruptured and spores escaping.

Fig. 7.—Contains similar spores in size and shape, which escape through the membranous pouches triangularly arranged at the dentate periphery. Found in pollen. No culture made.

Fig. 8.—*Penicillium glaucum*, common fungus, found on moldy bread and elsewhere; very common.



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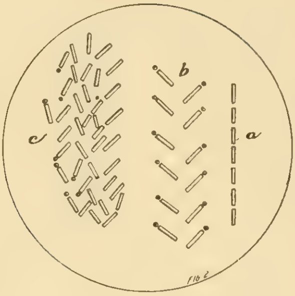

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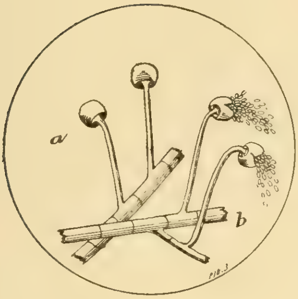

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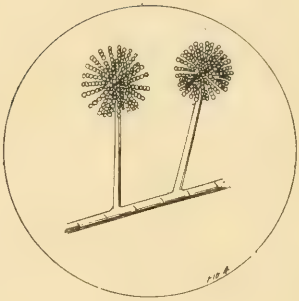

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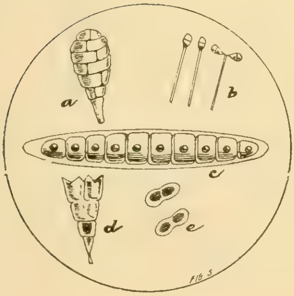

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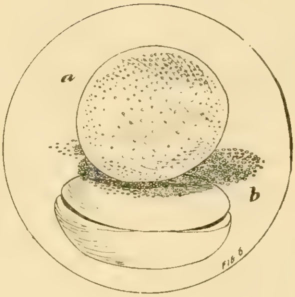

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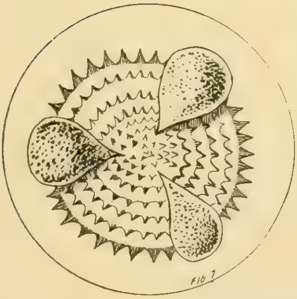

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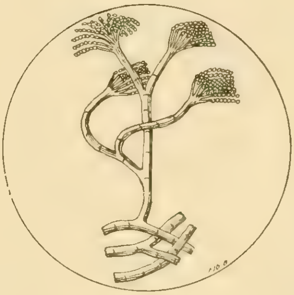

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more experienced, but have failed. To your question, 'Do not queens cease, or almost cease, to lay in badly infected colonies?' I can say that they do. I have often noticed that, when the strength first runs down, as it often does, rapidly, the young brood is disproportionately large; later there is little young brood. To your question, 'Do not hundreds of nurse-bees die before they are of field age (14 days)?' I shall have to reply that I do not know. It is plain to me, however, that hundreds of mature bees die away from the hive; but whether young or old or both I can not tell. As often the first indication of the disease is the observed check in the honey-gathering, I have thought that, probably, bees of all ages were affected. I have removed hundreds of queens from populous colonies during the swarming season, but there is *never* that rapid loss of strength noticed in this disease, thus proving to me that this depopulation must come from the loss of flying bees and not entirely from diseased brood. When swarms have been shaken on foundation, and have carried the disease with them, I have noticed that many bees, nearly mature, died in the cells, and but little, comparatively, of the younger (not yet sealed) brood was affected. From this I have drawn the conclusion, that perhaps the mature bees were the ones first affected, and that by them the disease was communicated to the brood; and when the contagion was strong, the brood died early; and when weak it lived to be older, even to maturity. This conclusion is partly speculative, and I have written it thinking it might be suggestive to you."

Mr. N. D. West, in a letter of Dec. 8, 1899, gives the experience of a large honey-producer which will be of interest here:

"He shook the bees off the combs of 150 colonies, early in the season, when the disease was at its worst stage. He extracted the honey, and made the combs into wax. This fall, after the honey-flow was over, he had a great many partly filled sections he wished to have finished. He placed these on twelve hives, and fed the extracted honey from under the hive; and when the sections were completed the bees had a fine lot of healthy brood. This was so late in the season that no other brood was in the yard. He intended to destroy the twelve colonies as soon as his sections were finished; but I asked him to winter them and watch the results next spring. I think he said he would do so. However, in his apiary I do not think the disease had advanced far enough to show the coffee color very much."

LABORATORY INVESTIGATIONS.

After thoroughly examining the specimens sent by Messrs. York and Root I received from Mr. N. D. West, New York State Bee Inspector, two specimens—No. 1 and No. 2. These had the same general appearance as the first specimens, and proved the same microscopically. None of these were foul brood or pickled brood.

No. 1.—[WEST.] Marked "*bad brood.*" New bright comb, containing eggs and brood from larvæ just hatched, to full-grown bees emerging from the cells. Some appeared to have died from disease, and others from want of food. The eggs were free from all signs of disease—no germs. Some were laid in cells containing remnants of the old dried mass, which, in some instances, extended the entire depth and on all sides of the cell, and was of a light brown color, sometimes dark brown, less frequently jet black. In some instances the mass had been removed by the bees or the liquid substances evaporated, leaving only the cocoons, the skin of the pupa or larva, as the case might be. Young larvæ in these cells were affected, and even larvæ only a few days old would show the characteristic dark spot on some part of the body, being the first sign of the disease to the unaided eye. This showed more plainly on older brood that had been fed the rich nitrogenous chyle mixed with pollen. Honey was also found in these foul cells. A few small particles of pollen were found, but these were free from infection. Cultures were made, and *Bacillus milii** and *Bacillus thoracis*† were found in all cultures. From some specimens cultures were made showing almost pure cultures of *Bacillus milii*, the *Bacillus thoracis* being entirely absent. Specimens sent by Messrs. York and Root showed the same forms. In some of the culture-tubes a species of fungus (Mucor, Fig. 3) grew luxuriantly—unimportant, as it is found on decaying matter, both animal and vegetal, and not parasitic on a living host.

No. 2.—[WEST.] Marked "*different vicinity.*" Old black comb, brood of all ages, no eggs, no honey, no pollen, few cells capped, with mature bees dead and rotten; some of the larvæ showed signs of disease; cultures made from these developed altogether *Bacillus milii*: no *Bacillus thoracis* found.

Oct. 22, 1899, two more specimens received from Mr. West, No. 3 and No. 4.

No. 3.—[WEST.] Marked "*Boomhower.*" Comparatively new comb; wired; one cell contained a small amount of fresh pollen—not infected; a few cells filled with honey, some in foul cells, a few cells containing black rotten masses of a decidedly watery consistency, which, under the microscope, appeared oily or milk-like; also a few pupæ which have dried by evaporation of the liquid substances, leaving them without discoloration or much change in shape; not settling down to the lower side of the cell as is common; few of these showed signs of disease. There were also found in open cells, dark brown heavy masses much like those found in foul brood, yet not so dark, so adherent to the combs, nor so hard and glue-like, but drier and more granular. The heavy dark masses contained *Bacillus milii*, and many species of fungi—[Fig. 5], latter not important.

No. 4.—[WEST.] Marked "*M. Rickard.*" Comb nearly new; no eggs, no larvæ; over half the area scattering sealed brood. Many pupæ showed no signs of disease, and seemed to have died from natural causes—absence from the hive, environments, etc. In the thorax of the well-advanced pupæ, dark and rotten *Bacillus thoracis* was found; in every examination of the abdominal contents, *Bacillus milii* was found, indicating a mixed infection. One cell contained some old pollen in which was found the fungus [*Aspergillus pollinis*, Fig. 4] of pickled brood. This was also found in many of the dark rotten masses. The combs were riddled by the wax-moth larvæ (*G. cereana*).

**Bacillus milii*, n. s. So named from its resemblance to millet seed. [Fig. 1.]

†*Bacillus thoracis*, n. s. Found in the thorax, and in the air-passages, spiracles, etc. [Fig. 2.]

No. 5.—[WEST.] Marked "*diseased brood.*" Received Nov. 4, 1899. Comb nearly new; few eggs, no larvæ, dark dried masses not sealed, and sealed brood. Many pupæ dried out without discoloration or loss of shape. Of more than one hundred bees examined from this specimen, only one showed signs of death from disease, and this showed *Bacillus milii.* In one old dark dried mass, not sealed, was found the same germ. One cell contained pollen, of which several mounts were made, discovering various parasitic fungi [Fig. 5, *b*, *b*; Figs. 6 and 7], the most important of which was *A. pollinis* [Fig. 4], the fungus of pickled brood.

The combs from P. H. Elwood were old and black; a few cells of sealed brood, and many cells in which were the old dried black masses. Careful investigation revealed nothing new; the two germs already isolated were present in most instances. Cultures revealed a multitude of putrefactive germs.

EXPERIMENTAL INVESTIGATIONS.

Nov. 7, 1899, I secured, through the kindness of Mr. L. Cowell, an enterprising bee-keeper in the suburbs of this city, two nuclei for experimental purposes. Each had bees enough to cover three or four Langstroth frames, and were designated as Nos. 1 and 2.

No. 1.—Had one frame with sealed brood on both sides, and one frame with sealed brood on one side, plenty of bees to cover the brood; no larvæ; few eggs; bees hybrids, queen dark, one year old; plenty of normal pollen not infected; some honey: also some sugar syrup already in stores; clean combs and in good condition, generally, for so few bees.

No. 2.—About the same as No. 1, except that there were more bees, brood of all ages, less stores, plenty of natural pollen not infected; queen dark, two years old; no honey coming in, on account of early frosts and subsequent rains.

After making the above notes I placed 100 *cc* (nearly half a pint) of infected syrup containing *Bacillus milii* from cultures twenty-four days old, in each hive. Nov. 10 No. 1 had stored all the infected syrup in the combs; no sealed brood, no larvæ, a few eggs, queen apparently active.

No. 2 had stored all infected syrup, brood of all ages, no signs of disease; fed infected syrup as before to each. Weather for the past three days fine; bees bringing in fresh pollen and some honey.

11th, weather bright and warm—mean temperature 80° F.; 12th, removed feeders from each hive.

No. 1.—Larvæ just hatched, queen active, few eggs.

No. 2.—Much the same as before, except that the area of brood had increased; weather fine; 3 P. M., temperature 82° F.; no evidence of disease; bees bringing in pollen and some honey; did not place more infected syrup.

Nov. 26.—Examined bees again. No. 1 contained no brood of any kind, no eggs, queen apparently all right. On account of pressure of other business the bees were not examined from the 12th to the 26th, and it is not known what became of the brood present at the last examination. As the queen is only one year old with plenty of normal food, including a large quantity of infected syrup, one might suspect that the infection had something to do with its disappearance, as the weather has been fine.

No. 2.—No eggs, larvæ six or seven days old, indicating that the queen had ceased to lay for the past ten days; considerable sealed brood. At the outer edge of the circle were found several scattering cells not yet hatched or uncapped. From these were removed three nearly matured dead bees. Other pupæ were nearly white with the dark spot on the abdomen; some were dark while others were entirely black. In this, as in some of the New York specimens, there was some destruction or disfigurement of the cappings, which appeared to be from without rather than from within, as if it had been done by the impatient nurse-bees. These were in every respect like the originally examined specimens from New York, and the examination of nearly one hundred slides from these nearly matured bees, *Bacillus milii* was found in nearly every preparation.. In no case did I find, in these combs, larvæ of any age dead, or apparently suffering from the infection; yet on examining several larvæ I found the significant *Bacillus milii* from which cultures were made. Now, here it seemed I had "struck a knot," so to speak. Why did not the infected larvæ die as readily as the infected pupæ died? This was a problem for solution. A few remarks upon the life characters of bacteria in general will make this matter better understood, and satisfactorily answer our question.

Some bacteria grow well in a neutral and few grow in an acid medium. While these grow feebly in a neutral and not at all in an acid medium, they are best suited to an alkaline medium. They are anaerobic (live best without air). The liquids of the young larvæ for the first six or seven days give an acid reaction; therefore, although these germs are sparsely present in the body, they are in an antiseptic medium, and do not grow at once. When the larvæ are older, and pollen and a richer chyle-like food is given, the liquids become neutral—finally alkaline naturally—thus giving the proper medium for a rapid growth. As we have observed in artificial cultures, the alkaline medium gradually, in a few days, becomes acid with a consequent cessation of growth, also that the watery masses of dead brood gave an acid reaction, we may infer that the acid condition of the young larva has much to do in protecting it from active infection. This conclusion is supported by facts sufficient to warrant its correctness.

Dec. 14.—Bees again examined.

No. 1.—No eggs, no brood; plenty of pollen, honey, and infected syrup; several perfect bees examined; nothing found to indicate disease or infection. Their stomachs contained pollen from flowers just out of bloom (composite).

No. 2.—No eggs, no larvæ, about thirty cells of sealed brood containing dead, black, young, nearly matured bees; flowers gone; rainy and cold weather—temperature 40° F.; a pollen-like, liquid, acid excrement voided as the bees leave the hive. No examination was made of these droppings—evidently a ferment in the alimentary canal. Over fifty slides were examined from these dead bees; all contained *Bacillus milii.*

Dec. 20, bees again examined. They look black and sleek, ragged wings, and much discouraged; no brood in either hive; plenty of stores; queens present; estimated less than half the original number of bees.

CONCLUSIONS.

Here conclude my investigations, which have been carefully conducted; although under disadvantages as to season, etc., they have in a great measure been satisfactory. Many points of vital interest have been made clear, while others of equal importance are necessarily obscure. It is clearly not foul brood. It is clearly not pickled brood. It is clearly something new. It is apparently a disease of the pupa stage. The infection is clearly not in the pollen—not due to a fungus but due to bacteria.

All diseases, in animal and vegetal life, are due to the results of parasitic invasion—some by their mechanical presence, some by the ferments produced in the body, and in plants by changes in or taking from them their life juices, causing starvation and immature growth.

In any given case of rotten brood, dead from freezing, starvation, or other causes, being allowed to remain in the cells, much of the poison generated, as well as the germs themselves, or their spores, remain adherent to the sides of the cell. These are like the seeds which "fell on stony ground," and will not grow until the proper soil, such as is furnished by the rich nitrogenous substances supplied to the brood by the nurse-bees is brought in contact with them, when a luxuriant growth obtains. This produces a fermenting, decomposing food unfit for the brood, and sets up a ferment, a decomposition within the bodies of the bees, thus destroying their lives. This might happen to the host with any form of parasitic life, either animal or vegetal.

It might be said, speculatively, that the disease had its origin in starvation, and that in some cases several putrefactive bacteria of similar biological character were responsible for this malady, which, when once started and undisturbed, becomes as destructive as the old-fashioned foul brood. The two germs isolated having similar, or the same, biological characteristics, especially an alkaline medium in common, are both in a measure responsible for this disease, and perhaps the variations, the malignancy, etc., are due to modifications by their combined action. It is, evidently, now due to a specific germ, *Bacillus milii:* the other, perhaps purely accidental at first, on account of its requiring more oxygen, is now found in the thorax among the respiratory organs.

While it has not been clearly demonstrated by facts, practically, it appears to be true that perfect bees, especially nurse-bees, are injured by the infection.

DIFFERENTIAL DIAGNOSIS.

Foul brood, pickled brood, and black brood. Foul brood, due to *Bacillus alvei*—a specific bacterium.

Pickled brood, due to *Aspergillus pollinis*—a specific fungus.

Black brood, due to *Bacillus milii*, modified, perhaps, by *Bacillus thoracis*, specific bacteria.

Black brood may be introduced into a healthy colony through infected food or infected combs—combs from which the diseased brood has been removed, or in which particles remain. The food for the young larvæ, either from its chemical reaction or from its lack of nitrogenous substances, is not a suitable medium for immediate growth of the germs; but when the chyle-like food is furnished the older larvæ, a chemical change in the food produces a change in the liquids of the bee, which become a suitable nutrient medium for their rapid development and dissemination. It would appear that, in some cases, *Bacillus thoracis* was the cause of death, as the spiracles, or openings admitting air to the respiratory apparatus, were closed by the products of decomposition or the result of it. In such cases it is usually nearly matured bees that are choked for want of air. These did not show the discoloration or shapeless mass which always obtains when *Bacillus milii* is found in the abdomen. This latter germ, multiplying rapidly in the rich nutrient medium of the alimentary tract, may destroy younger brood than the former. It is often found in other parts, and is certainly the cause of the dark masses of rotten brood. Both germs are found in the same comb, and often in the same bee, thus insuring a mixed infection.

SYMPTOMS AND COURSE.

Brood is usually attacked late in the larval life, and dies during pupation, or later when nearly mature and ready to come forth through the chrysalis capping. Even after leaving the cell they are so feeble that they fall from the combs helpless. Most of the brood dies after it is sealed. In this it is much like pickled brood, except that as much or more brood dies in the late larval stage than in the pupa. In foul brood, while brood of all ages dies, yet more dies "at the ages of 6, 7, 8, and 9 days than at any other age" (author's Foul Brood, p. 46), even before the rich chyle-like food mixed with pollen is given, which is such a necessary environment for pickled brood and *black brood.*

When the larvæ show the first signs of this disease, there appears a brownish spot on the body, about the size of a pinhead. The larvæ may yet receive nourishment for a day or two; but as the fermentation increases the brownish spot enlarges, the larva dies, stands out, swollen and sharp at the ends. In this they are like pickled brood, except that the brown spot is not present in pickled brood, but pickled brood sometimes becomes brown after death. Foul brood turns brown only after the action of putrefactive germs have brought about decomposition. No decomposition from putrefactive germs takes place in pickled brood. In *black brood* the dark and rotten masses, in time, break down and settle to the lower side of the cells, as a watery, syrupy, granular liquid—not the sticky, ropy, balsam or glue like semi-fluid substance of foul brood. It does not adhere to the cell walls like that of foul brood; has not the characteristic foul odor which attracts carrion-flies, but a sour, rotten-apple smell, and not even a house-fly will set her foot upon it. Cappings in foul brood are sunken in the center when broken, sometimes puffed out by internal gases. In *black brood*, the cap is disturbed from without, sometimes uncapped, and cell contents removed by the bees; not so in foul brood. The cap in pickled brood is usually undisturbed. The decayed brood masses do not adhere to the cell walls like either of the others.

During a good honey-flow, of a few weeks' duration, if the colonies are strong, *black brood* and pickled brood entirely disappear so far as appearances go; and even in foul brood, colonies seem for the time to improve. The most common causes for this apparent improvement are that in *black brood* and foul brood the old foul combs are filled with honey instead of brood; and eggs are laid in cells hitherto not used for brood, and in new combs when comb building is going on; or where comb-foundation is used, the queen takes advantage of this and deposits her eggs before the cells are drawn out and filled with honey. Again, proportionately, there is less brood-rearing and more comb-building during a heavy honey-flow in strong colonies than in weak ones. In weaker colonies these diseases do not disappear, as more brood is reared and less comb is built, in proportion to the mature bees, than in strong ones. In pickled brood the infection is in bad pollen: nice new pollen always causes it to disappear. Why these diseases should recur when there is a dearth of honey in the field, would be of interest to many.

In strong colonies, as we have seen, proportionately less brood was reared during the honey-flow, and now we have fewer bees to keep up the strength of the colonies against the normal death-rate. Again, the brood is gradually finding its way back to the center of the brood-nest, where there are many infected cells which were filled with honey during the rush of the honey-flow. These, with inclement weather and other unnatural surroundings, are conducive to recurrence. Often new pollen is stored on old infected pollen—in the same cell—and when this new pollen is exhausted, and no other to be had, the old pollen must be used; hence a recurrence of pickled brood.

REMEDIES.

The best time to effect a cure is during a honey-flow.

Adopting a modified McEvoy plan:

Make your stocks strong by uniting; place them upon comb-foundation starters, and cage the queen. After five days remove the starters and make them into wax, and give full sheets of foundation—keeping the queen caged five days longer. This will give time for all infected mature bees to have disappeared before any brood is reared.

Don't try to save infected mature bees by drugs. They are not worth the trouble; yet salicylated syrups,* during a dearth of honey in the field, would in a measure prevent a recurrence, but would not cure the disease. It would not destroy the germs, but prevent their growth, by placing them in an antiseptic † medium.

If a cure is contemplated when little honey is coming in, the above modified McEvoy plan should be observed in every detail, and the bees fed with salicylated syrups until the combs are well filled, so that all food may be rendered antiseptic by the time brood-rearing begins.

Great care should be taken to melt all old combs and removed starters into wax at once. Do not use a solar extractor, but remove the material at once to hot water or a steam-extractor. Until further investigations shall reveal the longevity of these germs in open air, I shall recommend a thorough disinfection of the hives, frames, etc., by boiling in linseed oil for half an hour. This would not injure hives or fixtures; besides, the high temperature reached would insure thorough disinfection. Careful, practical, and experimental work, coupled with microscopical investigations in the presence of this disease when at its worst, will, I feel confident, discover some practical plan for its successful eradication.

A MODEL APIARY.

Essentials of Success in Comb-honey Production; tall Plain Sections.

BY J. W. YOUNG.

So far I have been quite successful in this business, although at times I have had considerable loss in wintering, but have learned that, by having all colonies strong in the fall, and provided with plenty of stores, they will usually come through the winter in good condition. They are all in chaff hives on their summer stands, as can be seen by the photograph which was taken in the month of December last. To-day, Jan. 19, the bees appear to be wintering nicely, and were out flying as lively as in the summer season, something very unusual in this locality at this time of year.

Starting in a small way I have gradually increased my apiary until now I keep about 80 colonies, which is about all I am able to attend to with my other business.

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*Sodium salicylate one ounce, water five gallons, white sugar forty pounds. Make syrup without heat.

†Antiseptics prevent germ growth. Disinfectants destroy the life of germs, by actual contact only.

APIARY OF J. W. YOUNG, YOUNGS, NEW YORK.

This part of York State is a very fair locality for bees, and a good many are being kept by the farmers and others in this and near-by towns.

By trying at all times to place a good article on the market in the best possible condition I have, during the past few years, built up a fine home trade so that I am able to dispose of nearly all my honey at home and in near-by towns. The honey crop was very poor with us the past season on account of the great drouth, so I was quite unable to supply the demand. I run my apiary mainly for comb honey, producing only a small amount of extracted to supply the local demand.

I used the tall sections with cleated separators in a small way during the past season, and am favorably impressed with them, so that I shall use more this year, and will also try using the fences in some of my supers with narrow 4¼ sections.

Youngs, N. Y.

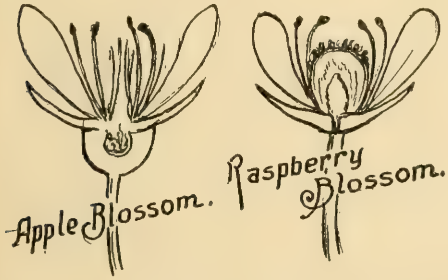
NOTES FROM THE ONTARIO CO. BEE-KEEPERS' CONVENTION.

BY F. GREINER.

The bee-keepers of Ontario Co. seldom fail to have a profitable meeting. Their annual convention was held Dec. 14 and 15. So many good things came up that ought to be known in wider circles that I will pick out some of the good things for the benefit of the readers of GLEANINGS. Through the influence and by the aid of the Bureau of Farmers' Institutes we were fortunate enough to have Prof. F. Benton, of Agricultural Department, Washington, with us, and naturally every thing centered around him. From his several lectures I make the following extracts :

FERTILIZATION OF FRUIT-BLOSSOMS BY THE BEES.

The cross-section of a matured apple shows five separate seed-chambers grouped around the center in star shape. The pistil of the apple-blossom is also in five sections, with conductors leading to these embryo seed-chambers, and unless a grain of pollen reaches each one, the fertilization is incomplete—a perfect apple can not form. Perfect fertilization requires five different acts. An apple-blossom has many stamens, and the pollen is produced at the extreme end of each one, forming there an enlargement called "anther." A single anther contains one million or more grains of pollen, of which but five are needed for the fertilization of one blossom. A raspberry-blossom is built differently from the forenamed one. The raspberry (fruit) is composed of some 200 separate little sections, each containing a seed, and so the blossom is constructed in a like manner. What will later be the fruit is already present in an embryo state, 200 little sections in miniature, and from each of them protrudes the pistil, like a fine short hair. A grain of pollen must be conducted through every little hair—really a tube, the end of which is receptive through the organ called stigma. A bee, after alighting on a blossom of this kind in search of honey, which is to be found at the base of the blossoms, rubs over the anthers with its body, which is covered, especially on the under side, with many hairs of a compound feather-like nature, and becomes covered with the pollen dust. Whirling around, first one way then another, in order to reach fully all the nectar-secreting glands, it brushes again and again over the 200 protruding pistils. One bee after another visits the same blossom at short intervals as long as the secretion lasts ; and in time every one of the stigmas receives its grain of pollen, and a perfect fruit results.



During the earlier part of the season, when pear and apple trees bloom, the weather is often unfavorable for pollination ; the pollen remains too moist and sticky. In such a case, not much fruit can set. Should the sun come out for but an hour, the pollen becomes dry. The bees turn in ; and the more numerous the bees are, the more fruit will set. There may be seasons when fruit would set abundantly without the help of honey-bees. In an unfavorable season, however, they are an absolute necessity. Cross-fertilization is strictly necessary for raspberry, gooseberry, and huckleberry. When the bee visits a blossom of the last-named kind, and pushes its body into the bell-shaped flower, it seems that the stamens are so arranged that the white pollen is dusted upon the head and thorax of the bee. The bee is unable to remove the dust from these places; and when the next blossom is entered, the head and thorax of the bee come in contact with the stigma first, and before the anthers are touched, and in this manner cross-fertilization is assured.

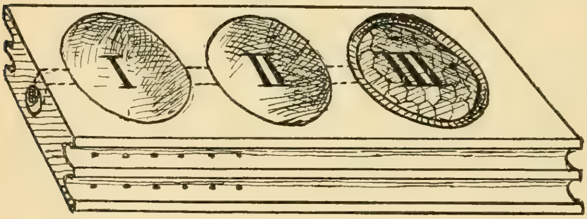
It would take too much space to go through the long list of flowers benefited by bees. However, bees are not the only agents to perform this work. There are other insects and the wind. In the early springtime bees are most numerous, and therefore indispensable.

Some pollen is not utilized by the bees, probably on account of coarseness or peculiar shape of the grains.

QUEEN-REARING, AND FEATURES CONNECTED WITH IT.

The professor had used artificial queen-cells made of many different materials—acorn-cups, paper, gauze, and glass. The latter were used with fair success and a great deal of satisfaction. From a glass tube of proper size, short pieces were snapped off by means of a heated wire. The ends only of these pieces were touched to melted wax, and each was quickly attached to the top-bar of a frame. A little hot wax was dropped into the tubes to form the bottom of the cells, when they were ready to receive the royal jelly and larvæ of suitable size. Cells prepared thus were accepted by the bees, and finished up. After being sealed, the wax coating that had been added by the bees was carefully removed from the glass parts of the cells, when the development of the larva to pupa and perfect queen could be noted.

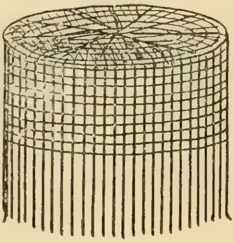
A most unique experiment the convention was greatly pleased with, and certainly does Mr. Benton great credit. In the Benton shipping-cages an improvement had been made. As he stated, the customary cage is made out of an oblong block with three holes bored in it, and overlapping each other. This feature Mr. B. objected to. A thin wall should be left standing between these holes, connecting them by a smaller perforation through the walls, which may be effected by boring a small hole from the end into the cage. Formerly the sides of the cages were made flat or smooth. Packed tightly in the mail-bags it might cause a lack of ventilation, which can be easily insured by grooving the long sides of the cages as shown in the drawing, and boring, *not punching*, the little holes for ventilation from the grooves into the cage. By thus *ventilating only chamber I*, the bees may retreat to compartment II, if they should find it more congenial there. In fact, here they *will* generally be found clustering.



BENTON SHIPPING-CAGE.

A cage that had been used on long journeys several times was shown around. It was coated inside with bits of newly secreted, white wax by the bees that had occupied it, proving thus how comfortably they must have felt. The food consists of pulverized sugar and honey kneaded to a stiff dough. Before it is put into the cages, compartment III is slightly rimmed out at the top edge with penknife or other suitable tool, and coated with beeswax. The food is carefully put in, a piece of comb foundation (heavy) of circular shape and proper size laid on the top for a cover, and sealed down with the hot blade of a knife or screwdriver. Protected and hermetically sealed on all sides, except the little place where the bees have access to it, the food will keep in good order for a year or more. In some instances, when the food had nearly all been consumed the bees had drawn out the cells of foundation on the under side to some length.

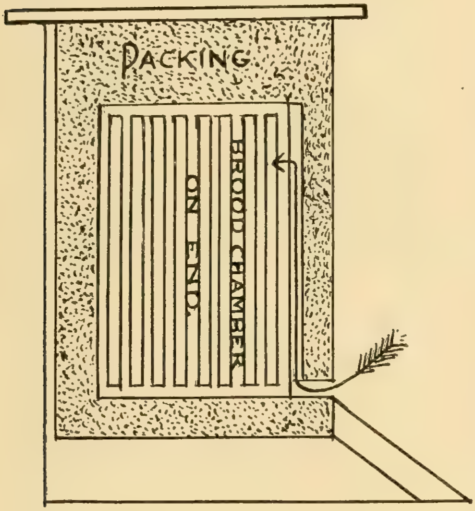
Mr. B. prefers for an introducing-cage the one illustrated by F. Greiner in GLEANINGS over a year ago, and later by Mr. Hutchinson in the *Review*, but made more substantial by rolling an oblong piece of wire screen around a two-inch-thick round stick, fastening the ends together. He closes up one end of the thus constructed gauze tubing by first making many incisions with a pair of tinner's shears, about an inch deep, then bending over and hammering down over the end of the stick. After being thus treated it is taken from the form, laid down on the bench, closed end down, and newly built comb is mashed into it to make the top solid, and covering or hiding all wires. The open end of the cage is raveled so the straight projecting wires may be pushed into the comb. Mr. B. does not deem it essential to cage a queen on brood.



INTRODUCING-CAGE.

Miscellaneous subjects were touched on by Mr. Benton in course of the day, as "Improving Bee Pasturage," "Good Winter Hive," etc. But little can be done about improving bee pasturage except, perhaps, sowing such things as clovers, buckwheat, etc.; but Mr. B. had noticed, when he first moved his large apiary into Maryland, that a change took place in the flora, caused by the bees themselves. There was at the time a white aster present in limited numbers among other varieties of asters, which latter by far outnumbered those first named. Only the white asters were visited by the bees to any extent, but on them they worked steadily. Not being enough of the asters, no gain in the hives could be noticed. But as the years wore on, the white asters increased. The bees in all probability assisted those blossoms in cross-fertilization to such an extent that plenty of seed was produced where before only a few grew to perfection. These seed became scattered, more plants grew up and produced more seed, etc., *ad infinitum.* Now there is a good stand of white asters everywhere, and they have almost driven the other varieties to the wall; the bees also reap now a plentiful harvest from them. A hive on scales has made a gain of 7 to 8 lbs. some days, which, however, fell back during the night by a third. On this account it seems this white aster might be introduced into other sections to good advantage. The plant can hardly be called a bad weed or a pest. There are plenty of blue asters growing all over the country. If the white species could be substituted it would certainly be a boon to the honey industry. The yield, however, comes late in the season, somewhat like the goldenrod Mr. Hershiser reported last year; and in order to secure the best results, Mr. Benton found it necessary to keep on feeding his bees clear up to the time asters commenced yielding, in order to have them continue breeding. Only by this method was he able to secure good results. On this account Mr. B. had added a permanent feeder to his hives, enabling him to feed at any time without removing quilts, supers, or the like.

As regards wintering bees on summer stands, Mr. Benton has tried a new method with good success. An outer case is made use of, and the entrance is so well protected that neither wind nor sunshine can possibly hit it. The brood-chamber is stood on end, the rear uppermost, and the combs running flatwise with entrance, imitating the "Warmbau" of the Germans. The illustration shows plainer than words can do it, so here it is.



Pretty sensible idea, is it not? Perhaps the same method may be used with good success without turning the hive on end, simply by turning the hive a quarter way around and boring a 1½-inch hole about two inches below top-bars for an entrance, and then packing as shown.

Among the questions asked were the following:

1. Do you prefer wintering under sealed cover or quilt and packing?

Answer.—Quilt and packing is best.

2. How keep moths out of combs?

Answer by F. Benton.—By use of bisulphide of carbon.

Greiner stated that he burned sulphur in a top story over a stack of combs or comb honey, then aired after. Sulphur fumes do not injure the health of human beings, but bisulphide of carbon does. Care must be exercised with the latter.

From a paper read by F. Greiner, entitled "Things are not Always what they Seem," I make the following extract:

"Friend Lapsley expresses an opinion in GLEANINGS that beginners are sometimes misled by veterans. The introducing-cage, made of wire cloth only, and mentioned in this report before, is a thing that is not what it seems, because it does not work in friend L.'s hands as represented. In order to be brief, and not occupy all the room there is, writers often refrain from going minutely into all the details, supposing the readers are able to read between the lines. Sometimes readers do not catch on, and failures result, even with good and experienced persons, as, for instance, Mr. L. If the introducing-cage is made from proper cloth, stiff enough, there will be no trouble."

The Doolittle method of ascertaining the amount of stores by lifting and weighing in one's hands each frame (comb), thus guessing the weight, undoubtedly proves a success in the master's hands; but it might not in the hands of many others. Greiner does not like to tear all his colonies to pieces in such a manner, particularly at a time when robbers are troublesome. Weighing the whole hive on scales he preferred, and this was indorsed by Mr. F. Benton. A guess has to be made on the weight of the empty hive, the combs, the bees, the pollen, etc.; but even this does not leave the sum total any more uncertain than Mr. Doolittle's guessing the weight of each comb, and is much less work.

The queen-clipping device advertised in some papers may not be what it seems. It requires much fussing, and G. claims he can clip three queens without that instrument to one with it.

The wax-moth has two broods, according to Mr. Harry Howe, and Entomologist F. Benton indorsed this in a measure. Greiner could not see any noticeable let-up in their breeding throughout the season.

Many implements are recommended and used for scraping propolis from section-holders and hives. Some seem flimsy. A piece of steel from a crosscut saw, 3×6 inches, serves better than any thing else.

The bee-escape was also hauled over the coals. A few prominent men do not seem to recognize it as possessing any great merit. It does not, under all conditions, do the work required; but when properly used it is a very pleasant auxiliary in the apiary.

In another paper, on comb-honey supers, Greiner spoke of the gradual development of the soap-box into the one-pound-section super of to-day. He had used T supers, combined honey and shipper's cases, and several other styles, but uses almost exclusively a wide-frame super. He thinks separators indispensable, and uses them, even at the risk of being called unskillful. The market demands honey of uniform weight and perfectly smooth faces. Such honey can not be produced without separators. The cleated separator is in favor with him, also the tall section, 4×5 inches. Fences he is not going to adopt. His experience with them leads him to advise making fences of hard wood to prevent the bees from enlarging the spaces between the fence-boards. Perforated separators suit him better than fences; he used them years ago, and honey produced between them showed perfectly smooth faces.

A paper read by Mrs. S. J. Smith, entitled "Bees versus Man," greatly pleased the convention. Mrs. S. has a poetical turn of mind. It is not the first time that she has given the members of the Association a treat of that kind.

Mr. H. S. Case exhibited and explained his little feeder which is used in the spring for stimulating. It is placed on top of the brood-frames, covered up with quilt and packing, a long spout running clear to the outside of the hive, by means of which it can be filled easily and quickly without disturbing the bees in the least.

Naples, N. Y.

RENDERING WAX FROM OLD COMBS.

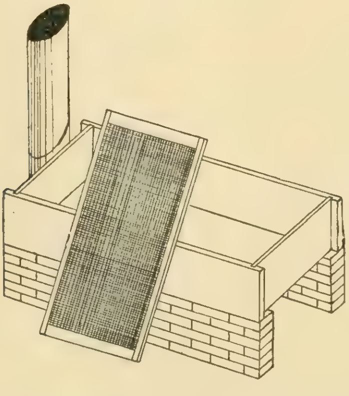
How to Make a Large Wax-tank at Small Expense.

BY S. C. LORD.

At best the rendering of old combs is not agreeable, and at the first attempt I saw the need of a simpler method than the crude one generally employed in this section. After some study a plan occurred to me, but which, however, I did not put into practice until Mr. A. W. Hatch, of Redlands, having employed me for a few days about his apiary, suggested the same plan; hence the idea is not mine exclusively. On trial the result was most satisfactory. Here is the method:

Make a pine box of any convenient dimensions, say 6×3 ft.×16 in., preferably of 1½-inch or 2-inch plank. Grooves should be cut about two inches from the ends of the sides, into which fit the end pieces. For the bottom, nail on sheet iron, driving the nails about an inch apart to render the box water tight. Mount this box on a brick arch, one end being left open for stoking, and the other fitted with two lengths of stovepipe.

Now make a frame which will fit tightly into the tank, and cover the same with wire window-screen. Here is a sketch which will make these specifications more lucid:



Fill this tank half full of water; cover up, and build a lively fire. When the water boils, put in your old combs, a few at a time, throwing out the frames as soon as all the wax has melted from them. From 200 to 300 frames can be disposed of at one rendering.

After stirring awhile, place the wire screen in the tank; press the whole mass below the surface two inches, and fasten the frame there by nailing vertically four small cleats on the inside of the tank, near the ends. Cover the tank, and keep the fire burning for an hour longer.

The next morning the wax may be removed and the under side scraped, or further refined, if thought necessary, by reboiling in a smaller vessel. The point, however, on which I lay the greatest stress is that, by this method, the amount of wax lost is reduced to a minimum.

On my first trial I scraped up and rendered about four bushels of slumgum, the refuse of a day's work by the old method, and was surprised to find that I had saved two dollars' worth of clean bright wax.

As a test of the efficiency of this method the good wife of Mr. Hatch, an excellent bee-keeper herself, endeavored to burn some of the residue after it had become dry, but reported that it would not burn, thus showing that there was little or no wax left in it.

Redlands, Cal.

[I have no doubt that your method of wax-rendering will work very satisfactorily; but one ought to be a fairly good mechanic to make a vat or tank of wood and metal to hold water or wax.—Ed.]

APIS DORSATA.

The Length of their Tongue Compared with that of Italians..

BY PROF. B. F. KOONS.

Dear Bro. Root:—Yours concerning bees and rack, also the packages of the same, were duly received. I have made careful measurements of the mouth parts of a part of the bees, with the following results expressed in thousandths of an inch:

No. 1, .220 No. 2, .240 No. 3, .215
No. 4, .170 No. 5, .170 No. 6, .174
No. 7, .173

I have also gone to my own hives and got some Italians; that is, I take them to be quite pure, and I examined a lot of them in the fresh stage, not alcoholic, and find the following in thousandths of an inch:

No. 1, .214 No. 2, .213 No. 3, .230
No. 4, .220 No. 5, .228 No. 6, .232
No. 7, .226 No. 8, .210 No. 9, .228
No. 10, .225 No. 11, .215 No. 12, .199

You will see that there is a very wide variation in the *Apis dorsata*, and a much greater uniformity in my fresh Italians. I fear that the alcohol has vitiated the record in those you sent, as alcohol is a *drier*. It coagulates the liquids, takes out the water, hardens, etc. I notice that, in preparing the mouth parts of my fresh bees for the microscope, often the tongue is retracted so as to be little longer than the labial palpi; but by gently pressing the base, the tongue will extend as it is usually figured in the books, but in the alcoholic specimens the short tongues refuse to respond to pressure; hence I infer that, when the bees were put into the alcohol, the tongues were retracted, and became hardened in that position.

I have examined some alcoholic Italians, and find some of them quite as short as the *Apis dorsata*.

My reason for asking that live bees be sent was that they could be examined in their normal condition; and I suspect that *that* is the only way to arrive at trustworthy results. I do not regard the measurements on *Apis dorsata* above at all reliable. Is there any one who can send me two dozen dorsatas alive in a shipping-case? Even if they should die they will still be fresh when they arrive, and unhardened by alcohol. I am interested in this question, and should like to follow it through to trustworthy results.

As to the stone, you make the common mistake. It is a piece of petrified coral, fragments of which are often found over the central parts of the United States. It is an old coral which grew there when the ocean covered that part of North America, millions of years ago, in the Silurian age. I recall finding them scattered over the fields when a lad, a little to the southwest of you, as I was born and grew up on a farm over in Crawford Co., near you. If you desire to keep the stone (it is very common in Ohio) I'll send it back with many thanks for letting me see it. From the remark in GLEANINGS I thought it was somethink new. If you do not care for it I should like to put it into my collection.

Storrs, Conn., Dec. 26, 1899.

[I would explain that I sent a number of alcoholic specimens of *Apis dorsata*, that we received from Mr. W. E. Rambo, to Prof. Koons, asking if he could not measure their tongues. This he has done, and the result is here shown. Of course, I should have preferred to send him live specimens, but as we were not able to obtain any we had to take what we could get.—ED.]

MATING OF QUEENS.

Does it Ever Take Place a Second Time? an Interesting Case.

BY PROF. C. F. HODGE.

Referring to discussion on p. 52 of GLEANINGS (Jan. 15), I may state the facts a little more explicitly, and then give my own interpretation, which differs from any of the three you suggest. And, first, as to the double mating in this one case, there is no chance of mistake. I saw this queen emerge from her cell, watched her between about 10 A. M. and 2 P. M. each day until she flew, and for some days after. I saw her go out the first time, timed her trip with watch in hand, 8 minutes, saw her return with organ of drone, saw the bees catch hold of and draw it out. Whether the bees took away too much, thus making it necessary for her to fly a second time, I can not say. I could plainly see a filament slowly pulled out of the queen's oviduct, and, under the stretch caused by the bees tugging at it, it appeared nearly ¼ of an inch long. The bees then did a great deal of brushing and combing and feeding their queen, and, as I have said, within 15 minutes she went straight out of the hive and off. In a somewhat shorter time, 5 minutes, she again came home with a second male organ, appearing exactly like the first. The bees immediately set about removing it exactly as before. If they took away too much the first time they did so the second, so far as I could see. But the queen soon began to lay, and all her eggs hatched workers, so fertilization was accomplished.

I do not feel that it is worth while interpreting a single case. It should certainly not throw any doubt on the time-honored one-flight theory, until, at least, a number of such observations are recorded. My own casual explanation is simply that, for a brief period, the queen feels the need of fertilization and the impulse to fly. If the male organs are removed promptly, before her body has adjusted itself to the change, the impulse persists and she flies again. Females of many animals have these definite periods of impulse to mate, and this, we may say generally, persists for a longer or shorter time after actual fertilization occurs. As to evidence for such double fertilizations being somewhat common, I have had one hive, among the seven or eight, in which some of the bees appeared to be pure Italian, and the rest almost as pure native, the queen being a daughter of Italian stock. This would not show, of course, if both or all the drones happened to be either black or Italian. About Worcester there are probably more black bees than any thing else, and pure stock is sure to hybridize very quickly. I may add that a beekeeper here, to whom I related the circumstance, said immediately, "That explains why some of my queens lay both black and Italians."

When we get more observation hives in our schools we may gain additional light on a good many such interesting questions, which we old folks have no time to follow up. It happened to be vacation, and I was determined to learn that one queen's story from A to Z. I wonder how many others in the history of apiculture have watched a queen continuously enough to be absolutely sure that she mated only once.

Worcester, Mass.

[If Prof. Hodge were not a scientific man, one who realizes the value of careful and accurate observation, I should be almost inclined to discredit his statement; but as he personally saw what he relates, I think we shall have to admit that at least one queen was fertilized twice. The probabilities are that the first meeting of the drone was rendered ineffective by the act of the bees in pulling away the drone organ.

It would be interesting to know whether this is liable to happen with any queen; but even then I should feel morally certain that, after the organs of the drone were once absorbed by the queen, this would be the last time she would take her flight. I have never yet seen a well-authenticated case from a competent observer, where the progeny of one queen, after she had raised one litter of bees, so to speak, would be changed in the next or any subsequent litter. I do not believe it has ever happened; that is to say, when the act of copulation has been fully accomplished, and the queen begins laying, she does not, in my humble opinion, ever meet the drone again.—ED.]

INSPECTOR'S OF APIARIES REPORT.

Foul Brood in Canada Nine Years Ago and Now; Good Work Done.

BY WM. M'EVOY.

During 1899 I visited bee-yards in the counties of Haldimand, Norfolk, Middlesex, Oxford, Brant, Wentworth, Lincoln, Wellington, Halton, Peel, York, Ontario, and Simcoe. I inspected 126 apiaries, and found foul brood in 47 of them.

In places where I had never been before is where I found nine-tenths of the foul-broody apiaries the past season, and over three-fourths of the owners of these diseased apiaries did not know that their colonies had foul brood when I first visited them.

I took the greatest of pains to explain to the bee-keepers how to manage the business so as to have every colony a good strong one, and in fine condition when they were cured of the disease.

In looking back over the nine years that I have inspected the apiaries in the Province of Ontario I noticed that I had found foul brood very widely spread through 30 counties. I succeeded in getting thousands of foul-broody colonies cured and the disease driven out by wholesale, and peaceful settlements made *in every case* where diseased stocks were sold through mistakes of the parties selling, not knowing of their colonies being diseased at the time of sale.

Nine years ago very few among those who kept bees then were able to tell the disease from other kinds of dead brood, and not over half a dozen men in Ontario could cure an apiary of foul brood, and end the season with every colony in first class order. The instructions that I gave while on my rounds through the Province, and the driving-out of the disease by wholesale, will make Ontario one of the safest places in the world to keep bees in.

Mr. F. A. Gemmill, of Stratford, Ont., is the man who deserves the credit for all the work that I have done, and the government of our country that has paid for it.

In 1890 Mr. Gemmill took hold and worked hard until he got the foul-brood act passed which has proved to be a great benefit to hundreds of bee-keepers.

I am greatly pleased with the way the bee-keepers took hold in the past season and cured these apiaries of foul brood.

Where I found a few worthless colonies almost dead from the disease late in the fall (and near fine sound apiaries) I burned them.

The total number that I burned in the Province was 20 colonies, after the owners and I had reasoned out things nicely together.

For the courteous and very generous way that I have been treated by the bee-keepers of every locality that I went into I return to them my most heartfelt thanks.

Woodburn, Ont., Can., Dec. 4.

[If it had not been for the foul-brood law that was enacted some time ago in Canada, and for an efficient foul-brood inspector to carry out its provisions, there is a possibility that bee-keeping in Canada might have been almost entirely wiped out. But how did foul brood get so fearful a start? I have been told that a bee-keeper who conducted quite a large business in selling bees years ago said that foul brood was not to be feared, and was not as careful as he might have been to ship entirely healthy stock. The result was, that the disease got scattered all over the country. However that may be, not only the bee-keepers of Canada but of the United States owe Wm. McEvoy a vote of thanks, even if he has been paid for doing his work; for one less tactful and less skillful than he would have been able to accomplish much less than he has done.—ED.]

CONVERSATIONS WITH DOOLITTLE.

SMALL BROOD-CHAMBERS.

A reader of GLEANINGS, living at Miami, Ohio, seems to have some trouble in grasping the thoughts I put on paper on page 49 of the January 15th issue, so with the permission of the editor I propose to have a little conversation with him by formulating what apparently is in his mind into questions, and have a little talk with him, just as I should expect we would talk were he here before me, and we talking face to face.

"Mr. Doolittle, you say on page 49 that you started with the Gallup hive holding 12 frames and changed to one holding but 9 frames. What were the first things that led you to make this change?"

"I hived first or prime swarms in these hives, waited a week or so, as the books told me to do, and then put on the surplus arrangement for comb honey. At the end of the white-honey harvest I had little honey in the sections, but found three or four of the outside combs on each side of the hive nearly solid full of sealed honey, one or two of outside ones on either side showing, by looking through them, that they had never had even one cell of brood in them, and very little pollen."

"Well, was not that a good condition for the colony to be in at the close of the harvest? Mr. Aikin and others are telling us that such a state of affairs insures good conditions during the winter, and is just the thing for large quantities of brood in the spring, as, with plenty of honey in the hive, the bees will not restrict brood-rearing from fear of running short of stores."

"Yes, I know all about this line of reasoning; but when I saw that amount of nice white honey in those frames, certainly 25 pounds more than was necessary for the colony before May 1, I could not help the feeling coming over me that such white honey, if in the sections, would be a salable article, while that coming later on would be just as good for wintering, but not so salable, on account of its darker color, as 'white-clover' honey (all very white honey being called such in market), brought fully a third more in price than that from buckwheat and fall flowers. So I concluded that the next year I would try some hives with dummies, in the place of three combs; and if there was not honey enough to supply the bees' wants, without their having fears of starvation, I would feed."

"Well, how about the results?"

"The result has been that, with the exception of three seasons, I have not had to feed at all, and two of these but very little. One year I not only had to feed in the fall, but had to feed several barrels of sugar in the spring; but during the nearly 30 years I have used these small brood-chambers, I have not had to feed more than an average of one pound of sugar to the colony, if it were spread out into years."

"But that is not just the part which I do not understand. You say that you not only secured the 25 pounds that was placed in the three outside frames, in the sections, by using three dummies in the place of the three frames, but that the 10 colonies so worked averaged over 40 pounds more comb honey than those left with the 12 frames as at first. Do you mean to say that the nine frames produced 40 pounds more than the 12 frames?"

"No, not just that. Frames never produce honey, any way. What I did mean to say was that, by using only nine frames in a hive, the bees and queen were placed in such a condition relative to their surroundings, that these 10 colonies were enabled to give me 40 lbs. of honey in the sections, on an average, over and above what those did which were still left in 12-frame hives."

"But how did you get those 25 pounds that were in the three frames (substituted by dummies) into the sections?"

"I did not get just *that* honey into the sections at all; for after it was once stored in the combs I could not touch it toward placing it in the sections (nor as extracted honey, for the extractor was little known at that time), only as I placed frames of honey in hives when I hived new swarms, in which case very likely some of it found its way into the sections, mixed with that coming in from the field. However, the most of these filled combs were used in colonies which were bent on building drone comb, where such filled combs were of the worker size of cell."

"You say that, when you used 12 frames in a hive, your average queens would occupy only about 800 square inches of comb with brood, but with the 9 frames, all were nearly filled and occupied by the queen. This would be 1050 occupied, when using the 9 frames. How is this? I can not understand it."

"I presume I was not quite explicit enough in what I said on page 49. It is almost impossible to get all the minutiæ of a thing into one article. If you will read the article again you will note that the 600 square inches of comb in the 12-frame hive, not occupied with brood, was 'filled with honey and *pollen*.' And as no pollen should ever go into the sections, a part of the 1050 was occupied with that, say from 50 to 150 square inches, according to the time of year and yield of pollen from the flowers."

"But what about the other 150 to 200 still not accounted for? Did the three inserted dummies increase the capacity of the queens that 150 inches?"

"Yes partly. When bees commence to store honey in the brood-combs to any great extent before they go into the sections to work, they will crowd with honey the room the queen would otherwise occupy with brood; so where bees do thus commence, we will, as a rule, have less brood in the hive than where the bees commence in the sections at the very commencement of the honey-flow. The other 'partly,' is accounted for by the fact that bees will always have a few cells of honey scattered about among the brood, as well as pollen, and also some little honey in the extreme upper corners of the frames. There are very few frames indeed that are *absolutely full* of brood; but with the 9-frame hive very many approach very nearly to the absolute."

"But if the three outside combs were *full* of honey in the 12-frame hive, how could there be any difference regarding empty cells? In other words, how could the substitution of three dummies for three combs of honey produce less empty comb in the hive for the bees to deposit honey in at the beginning of the harvest?"

"If you are conversant with the interior of the hive in the spring of the year, and during winter, you have noticed that, during every warm spell, the bees will break cluster and stampede over to the outside of the outside frames or combs, and carry honey from them and place it in the cells immediately surrounding the cluster. This they do to insure, as far as possible, their not being caught during some cold spell without honey within their immediate reach. And thus we always find that during spring, or up to the honey-flow, the outside combs have many empty cells in them, and these are the cells into which the first honey from our flow of nectar goes, if they are allowed to remain there. Having once commenced to store in these cells, the result is a continuance of the same, and a brood-chamber crowded with honey, as I have before stated. Perhaps I put it rather strongly when I allowed the impression to go that these three outside frames were *always* full of honey, and I wish this explanation to be taken together with the other. If the combs were always full of honey, there would be no loss, over the dummy plan, after the first filling of the three combs. The loss comes more from the provocation toward the crowding of the queen than otherwise, though I now see I did not make that matter quite plain on page 49."

"Do you think 6 Hoffman frames would be large enough for the brood-chamber? I think you have recommended that number."

"If my sole object was comb honey, allowing the bees to swarm, as most bee-keepers do, I should prefer six Hoffman frames to eight or ten; but seven would be more nearly the right number, in my opinion, if it was necessary to have any set number. But from my present standpoint I should prefer a ten-frame hive, and then use five, six, seven, eight, nine, or ten Hoffman frames, just in accord as I found the queen was using, five days before the expected honey-flow, filling up the unused space with dummies. The amount of comb occupied with brood just before the flow commences is the right number of frames to have in the brood-chamber during that flow, if we would secure the best results. This is the candid opinion of Doolittle."

HEADS OF GRAIN FROM DIFFERENT FIELDS.

[I solicit questions for this department; but they must be put on separate slips of paper, and marked "GLEANINGS Department." If you desire an immediate answer, say so at the time of writing, and a private reply will be sent you in advance before your question with answer appears in these columns; but questions that are mixed up with business matters will not only be subject to considerable delay, but possibly will receive no answer at all.—EDITOR.]

KEEPING BEES NEAR SUGAR-REFINERIES.

I am situated within a mile of the three largest sugar refineries in this city. Would it do to keep bees here? and would the honey be of any value if they gathered the sugar? As I am a beginner, please give a brief account. WM. RYAN.

Philadelphia, Pa., Jan. 11.

[It is a little difficult to say what would be the result. The probabilities are that your bees would visit the refineries, and perhaps make a deal of trouble.

As to the second question, that has been the occasion of much controversy; but I think all chemists are agreed in this: Thin sugar syrup fed *slowly* to bees, and stored in the combs, will be given a honey taste; that is to say, it will be partly digested. After it has been acted on by the bees it assumes a different chemical form; and from the standpoint of a chemist it is inverted, or honey; but on account of the fact that bee-keepers might feed sugar syrup for the production of comb honey, and put the same on the market *as honey*, the practice has always been condemned. No objection is made to feeding syrup for winter feed or for brood-rearing.

Honey has been defined as being the nectar of flowers, gathered and digested by the bees, and stored in the combs. Sugar syrup subjected to the same process has been called sugar honey, but was not regarded as *real honey* by Thos. Wm. Cowan and Prof. H. W. Wiley, United States Chemist.—ED.]

MOVING BEES IN THE DEAD OF WINTER—HOW TO DO IT.

I am going to move to Southern Kansas about the middle of February (about 700 miles); how can I fix my bees so that I can move them with safety? I will have a railroad car with stock, household goods, etc., so that I can be with them. I came from there two years ago next April. The weather was warm, and I tacked wire screen over the top, and they came through nicely; but I have never heard of any one moving bees in cold weather (or it is liable to be at that time). I have looked the last 14 volumes of GLEANINGS through carefully, and also A B C book, but not a word do I find about moving bees in cold weather. My bees are on summer stands, with super on top, with three or four thicknesses of burlap next to the bees, with super filled with oat straw. D. F. D. POMEROY.

Cuba, Ill., Jan. 22.

[Personally we have never had any experience in moving bees in winter, and are therefore not able to give you much advice; but it is a little risky to move bees in carloads in the dead of winter, especially if it should be very cold outside. However, if you *must* move them, place the hives on top of about four or five inches of straw in a box car, and place some straw between the hives, so that, when the cars are bumped, it will not produce a dead shock on the combs, which would break down very easily if the weather was very cold. It might be possible for you to leave the covers right on the hive if the weather is cold; but should it moderate there would have to be some provision by which you could give the bees air. I would, therefore, suggest that you place wire screens on top of all the hives, and then, if the weather is cold, you can put the cover on top of the screen; and if for any reason the bees require ventilation the covers can be lifted. If your combs are of the loose unspaced type it may be necessary to run spacing strips down in between the frames. If any of our readers have had a special experience in moving bees during winter, I should be glad to have them tell us about it.—ED.]

ENLARGING A BEE-CELLAR; POINTS OF CONSTRUCTION; CONVEYING BEES TO THE CELLAR.

I wish to enlarge my cellar to 10×18 in the spring, and intended to put in a brick wall and a brick floor with an air-space between it and the outer wall. Do you see any good points? and will not the brick absorb the dampness?

Will bees winter as well when placed in the cellar, as given on page 97, 1899, as if placed in without jarring?

When your bees are in the cellar, just apply your ears and nose at the door, and that contented hum and pure air says Doo-little with me. C. R. MORTS.

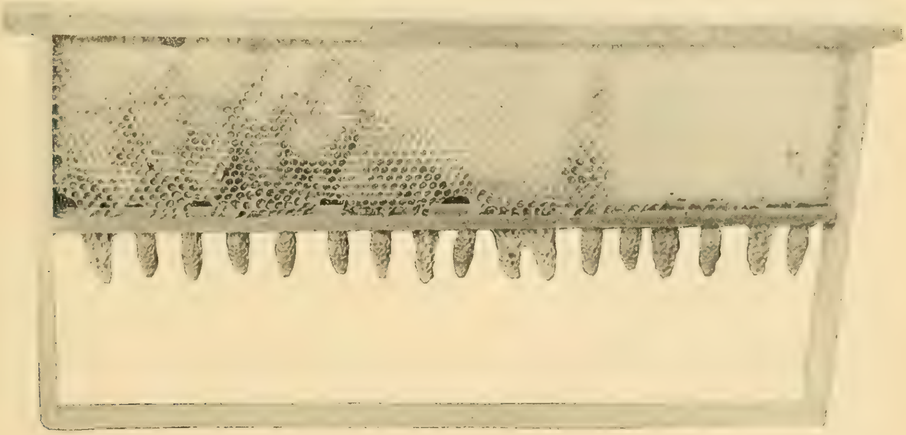
[Dr. Miller prefers a dirt floor; but on this point a great deal will depend on the locality, and the character of the soil. In this vicinity a grout cement bottom is almost a necessity. One of brick would not keep out moisture or water, while that of cement would. If the soil is dry and hard, the ground floor would be as good as or better than one of cement; but a brick floor would have no advantage, and might be a positive detriment.

On looking up GLEANINGS for Feb. 1, 1899, I note that you refer to the method practiced by N. D. West, of running the bees into the cellar by means of a plank shute. Well, now, it strikes me this would be rather rough treatment to give a colony, just as it is about to be put into its winter quarters for its long sleep. One would imagine it would get such an awakening that it would be a long time before it could go to sleep. But Mr. West is an extensive bee-keeper, and does things on an extensive scale, and if he did not get good results he would not practice the plan. But the average bee-keeper, especially if a beginner, would do better to take the colonies into the cellar as gently as possible. I like the plan of carrying a colony or two of them on a stretcher by two men, as shown in a late *Review*.

If the ground in the vicinity of the apiary is nice and level, then a hand-cart with large wheels, without box, but with simply a flat tray, may perhaps be used in lieu of an extra man; but the expense of the extra help is very small, because in one afternoon all the colonies of a yard can be taken into the cellar easily, and perhaps another afternoon or forenoon they can be all taken out. The matter of a day's time once in a whole year, or say $1.50 with 100 or 150 colonies, would cut very little of a figure.—ED.]

DOOLITTLE CELL-BUILDING.

I take pleasure in sending to GLEANINGS a photo from a frame of queen-cells which was started on the 18th of September in my yard.



The photo showing this frame of cells was started by the Doolittle method, the bees accepting every cup, there being 17 on the frame. This frame of cells was reared above a queen-excluder, with a good laying queen below. I expect to rear a very large number of queens the coming season for market, all of which will be golden Italians. E. L. DICKINSON.

Los Banos, Cal., Nov. 8.

POPCORN CRISPS; HOW TO MAKE.

In February, 1899, you told about popcorn crisps, but did not tell how they are made. My little girl has tried a number of ways, and wants to know how to make them. Please tell, as it will consume lots of honey all over.

Mayfield, N. Y. G. W. HAINES.

[The recipe for making popcorn crisps as described in GLEANINGS for February, 1899, is, I suppose, a secret, and the confectioner who makes them, if I understood Mr. Selser, would on no account give away the method of making. It is possible he might do so now. If Mr. S. sees this, will he see what can be done? For a fine toothsome confectionery, popcorn crisps, such as I tasted at Philadelphia, there is nothing any nicer; and, what is more, children could eat them and not get an excess of sweets, as they might from ordinary candy.—ED.]

VENTILATING BEE-CELLARS; DR. MILLER'S METHOD CRITICISED.

I saw in Stray Straws, Jan. 15, that Dr. Miller gets foul air in his bee-cellar, and you say in your footnote that this is a clear case, and, the fact being established in the case, it will be reasonable to assume that in other cases foul air is equally the disturbing cause.

I should think the doctor ought to know how to keep foul air out of his cellar without building a fire in it. I have wintered about 75 colonies in the cellar under our house the last 15 years. It is 26 feet square, with a partition through it made of heavy carpet paper. This is put there so that I may darken one half for my bees, and the other half I may have light for storing vegetables, etc., in. There are three windows in the cellar, and two doors — one door from the dining-room and the other from my back porch.

The chimney from the main part of the house is built from my bee-cellar, floor up.

At the base of this chimney I have a hole for cleaning soot, etc., out, and about four feet from the base I have another hole for a stove-pipe, so that I might put a stove in the cellar should it be necessary. To keep foul air out of the cellar I leave the holes, just mentioned, open; and to regulate the temperature of the cellar, should it get too high, I open one, two, or three of the windows; and, on the other hand, should it get cold when the windows are closed I open the door that leads from the cellar to the dining-room, at which place there is a heating-stove. The warm air will then go direct from the dining-room to the cellar and up the chimney. The draft going up the chimney is generally so strong that it would put out a good-sized torch-light when placed near the hole.

I don't think for a minute that there is any foul air in my cellar. Of course, if the doctor keeps the hole in his cellar stopped up he may expect foul air; and should he have a door from the cellar to the dwelling part, he may expect foul air to come up every time the door is opened.

Tell the doctor that making fires to drive away foul air is about as good as a thing of the past, as fans are found much better in this age, and likewise used. A. COPPIN.

Wenona, Ill.

HOOPES SMOKER; SOMETHING THAT WILL GIVE THE FREE USE OF BOTH HANDS WHILE IN USE.

In explanation of the drawings, Figs. 1 and 2 show smoker in operation; also the hand, at the same time grasping the end of a frame by the finger and thumb; and as for the inconvenience of getting the hand and wrist in or out of the bands which fasten it to the smoker, I have shown the latter drawn up above the hand, and buckled so the bands can be loosened or drawn tight at will.

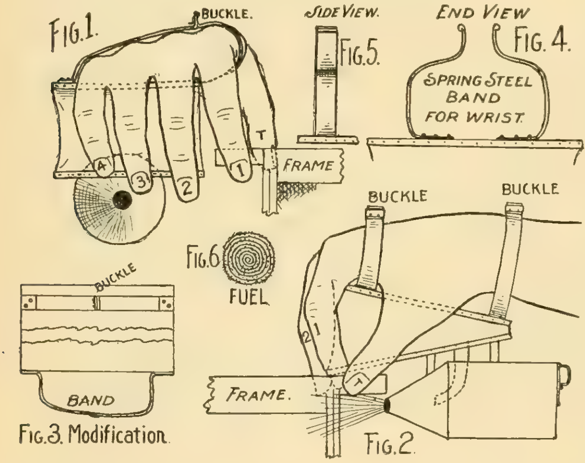


Fig. 3 shows the band in a different situation on dotted line in Fig. 1, a little modification which I am inclined to prefer to the other way. Figs. 4 and 5 show a spring steel band particularly intended for the wrist. The wrist may be extricated by twisting it on one side, and when withdrawn the spring steel gives way. This is better used in connection with Fig. 3 modification.

I was led to the designing of this smoker by the inconvenience of having to use both hands to do the smoking, as with the Clark smoker particularly, and the consequent cessation of smoke, in order to commence operations, when the bees would be as bad as ever—in the way, and bunching up, just where not wanted. Then I had to try the smoker again, and it would be several minutes before any thing could be done. Another idea is, that the new design favors bringing the smoke to bear just where the hand or fingers are operating, as in lifting out frames, cutting out or inserting queen cells, and for other purposes; and I might say that it will be found convenient for almost all operations of the apiary.

Fig. 6 is a view of roll of cotton of compact shape suitable for a necessarily small smoker as this must be. F. T. HOOPES.

East Downingtown, Pa.

[I have often thought I should like to have a smoker so constructed that I could send a continuous stream of smoke, and yet have the free use of both hands. The above arrangement, in my mind, does not quite fill the bill, and yet perhaps it is as good as any thing that could be devised.

The ordinary smokers with the bellows reversed can be set down on the ground so that the nozzle is within an inch or so of the frames of the hive. If any of the bees get to be obstreperous, the smoker can be picked up and be made to send a stream of smoke down upon the bees instanter.

Perhaps if I were to try friend Hoopes' arrangement I might like it; but it seems to me it would considerably handicap the hand to which it was attached.—ED.]

HOW TO FEED COLONIES IN THE CELLAR.

One of my colonies will be short of stores soon. Please tell me how to help them. They are in the cellar. I took them out yesterday, and they had a fine flight. W. E. GRAHAM.

Norfolk, Neb., Jan. 23.

[If you have combs of sealed stores, we would advise you to give one or more of these to the bees that are short. If you haven't any of these, give them cakes of hard candy, which can be laid on top of the frames.—ED.]

ADULTERATORS OF HONEY; HOW THEY DEAL WITH THEM IN MASSACHUSETTS.

You will find a squib clipped from the Boston *Traveller*, as to how the Massachusetts authorities deal with those who sell impure honey. I think this would be a good article for GLEANINGS, as it might serve as a warning to others who are in a similar position; and as judges are influenced greatly by decisions previously rendered by other courts for similar offenses, it can be used to advantage by the A. B. K. A. against the next man they take to court for selling adulterated honey.

F. MANSFIELD.

Dorchester, Mass., Jan. 14.

SOLD IMPURE HONEY; SANDS FINED $25.

Elijah M. Sands, clerk for Haskell, Adams & Co., wholesale grocers of 84 Commerce Street, Boston, was in the Somerville court to-day, charged with selling honey below the standard. The complainant was Inspector McCaffery, of the State Board of Health.

Inspector McCaffery said that he went to the grocery of Z. H. Gilgoff, on Washington Street, Somerville, and took away a tumbler labeled "white-clover honey." He brought it to Herman Lythgoe, analysist for the State Board of Health, who discovered it was far below the standard. Analysist Lythgoe testified that he had made an analysis of the "honey," and found that it contained 82 per cent of glucose.

Sands denied that he had any intention of selling an inferior article, and that he had no means of knowing when it was of the required standard. Judge Story fined him $25.

GLUCOSE AS A BEE-FOOD; SELLING GLUCOSED HONEY.

We have an apiary here, and have been thinking of feeding glucose. Is it a wholesome food for bees—that is, would bees keep healthy feeding it during the summer months? How would you advise us to feed it? What is the law, if any, on selling this honey? Do you think it pays to feed bees when they are not getting anything outside? In feeding glucose, would you advise feeding it pure, or would you mix in something else?

Ohio, Jan. 23. INQUIRER.

[Feeding glucose, and selling the same for honey! Why, my dear sir, what are you thinking about? That would be a violation of the laws of the State of Ohio, and would subject you to fine and imprisonment. In the first place, it is not possible to feed glucose to bees, even if you can get them to take it. It would have to be considerably diluted in water, and then they might store it in the combs; for the pure stuff, as it comes from the factory, the bees will not touch. If you know when you are well off, you will let glucose entirely alone. Several parties of late have been arrested for selling glucosed honey in Ohio and elsewhere — see above. Glucose as a food for bees is pretty poor stuff. They will almost starve on it, even if diluted with water, as its real sweetening power is very low.—ED.]

HOW TO GET RID OF LARGE RED ANTS.

Can you give a remedy to protect the bee from these large red ants? These are at least ½ inch long. While the bees kill a great many, it seems to get away with a large number of bees. They cut the wings so as to disable the bee, and possibly sting the bee as well. I have insulated them by means of 4 small dishes of water, one at each corner of the hive for the present. This seems to be a new trouble, much worse than the millers, as the latter can be wiped out for the present, but the ant holds on better. JAY S. BROWN.

Starke, Fla., Jan. 12.

[I am not able to give advice for the South on a matter of this kind; but if possible I would find the nest. With a crowbar I would make a hole an inch or so in diameter down through the center of the nest. Into this pour eight or ten ounces of bisulphide of carbon, which can be bought at any drug-store. Shut the hole tight with a plug of earth, and that will be the end of *that* nest of ants; for the gas generated by the liquid will permeate all the galleries in it, destroying every living organism therein. As a temporary expedient, setting hives on legs, and the legs in pans of water, is about as good as any thing that can be done. Putting a little carbolic acid in the water will make it much more offensive to the ants. Sometimes painting the legs of the hive, if legs it has, with common tar, will keep the ants off. But the best thing to be done in any case is to find the nest of the ants, if possible, and treat them by the plan described.—ED.]

CANDIED COMB HONEY; WHAT TO DO WITH IT.

To what good use can candied comb honey be put? Why does mine seem to candy so easily? Some of it candies before it is a month old. Perhaps it was not properly ripened.

W. E. HEAD.

Paris Station, N. Y., Dec. 15.

[I would put all such in the solar wax-extractor next summer. The wax can be re-rendered into nice clean cakes, and the honey fed to bees for stimulative purposes, or sold to bakers as a second-grade honey. Where wax and honey are melted together, the latter is apt to be off in color and flavor.—ED.]

AIKIN'S LAW OF COMB BUILDING.

If the argument of R. C. Aikin in favor of the tall section, that "In comb-building the downward progress exceeds the sidewise in the proportion of about 3 to 2" (which seems to be the natural way), why would not a brood-frame of the same proportion, say 12 by 8, or 15 by 10, be better? J. ULRICH GIBBS.

Whittier, N. C., Jan. 20.

[The same law holds true whether the comb is built in a section or brood-frame; and that has been one of the objections to the Langstroth frame, and why some prefer a deep or square frame. But the mere matter of comb-building in brood-frames is of small consequence as compared with that in a section honey-box, because the former may last anywhere from 10 to 25 years, while the other is used only once.—ED.]

SECTIONS 4¼×5×1⅜ VS. 4×5×1⅜.

Why not adopt 4¼×5×1⅜ sections for standard? Tests prove that 4×5 are better filled than 4¼×4¼, amd more of them; but they average only about 14 oz. I will try 1000 4¼×5×1⅜ this year.

Hale, Mo., Jan. 20. GEO. W. SHRADER.

[When well filled these will hold almost an even pound; but as a rule they will run a little short. The 4¼×5×1⅜ would possibly run a little over a pound if well filled. The 4×5×1⅜ holds 27.5 cubic inches, and the 4¼×5×1⅜ holds 29.22 cubic inches.—ED.]

EDITORIAL BY E. R. ROOT

SIXTEEN EXTRA PAGES THIS ISSUE.

THIS was rendered necessary by the accumulation of good matter, and especially to make room for what we consider very opportune and valuable matter for bee-keepers, the report of Dr. Howard, on black brood.

I SECURED quite a fine lot of kodak pictures on my Colorado trip. These will be strung along in these columns for the next three or four months. The bee-keepers of Colorado are very progressive; indeed they have to be, for many of them are specialists. And that reminds me that there are probably more specialists—that is, those who make honey-production almost their sole means of livelihood there—than in any other State unless it is California.

THE LEWIS FOUNDATION-FASTENER.

SEEING the illustration above in one of the Lewis Co.'s advertising pages, we felt interested in trying the machine to determine whether we should experience the same satisfaction as does the boy, who seems to be well pleased. We sent for a machine, tested it, and found it to be all right. It is quick and easy of operation, and is all it is represented to be. Each machine is made so that it can take either 4¼ or the tall section by reversing the plate or heated tongue, which is reversible. This is no paid puff, for our editorial space can not be bought at any price.

LEWIS
FOUNDATION
FASTENER

THE REFORMED SPELLING.

I SAID in our last issue that I would say no more about the reformed spelling; but so many votes are coming in, both for and against (mostly against), that I feel that some formal acknowledgment is necessary. I therefore desire to thank all of our subscribers who have so far indicated their preference, because it is impossible to acknowledge each one by letter. Even at the present time negative votes are showering in, so the matter will probably have to be shelved for at least a considerable time to come.

A NEW ENEMY.

BEE-KEEPERS have a new enemy to fight in what Dr. Howard has christened *black brood.* A new enemy? Well, perhaps it would be more accurate to say an *old* enemy, but not hitherto recognized. We positively know now that it has been found not only in New York, but in California, and the probabilities are that it has been masquerading under the name of foul brood, pickled brood, and diseased brood in various other States. It is now possible to explain the divergence in opinion in regard to foul brood, or what was thought to be such.

THE NATIONAL BEE-KEEPERS' UNION AMALGAMATED WITH THE UNITED STATES BEE-KEEPERS' ASSOCIATION.

IT will be remembered that this matter was laid before the members of both associations; and now the vote having been taken by both, the results show that amalgamation has been agreed to almost unanimously. The financial statement of the retiring Union is as follows:

FEBRUARY 1, 1900.

By balance Jan. 1, 1900	$125 95
By 63 members' fees	63 00
	$188 95
To paid for printing, stamps, type-writing, and incidental expenses to date	15 00
Balance sent to new treasurer	$173 95

The amount of $173 95 has been sent to General Manager Secor, of what is now the National Bee-keepers' Association.

After fifteen years of continual service, during which time the Union has met with an almost unbroken line of successes, Mr. Newman thanks his many friends for their cordial support, and for their condolence in his present affliction of the loss of sight. He offers congratulations to all the members, and bequeaths from the old Union to the new amalgamated association "a banner unsullied, with victory inscribed upon it;" and he hopes that it may "wave in triumph over the new association for generations to come."

In a private letter Mr. Newman says that, although his health has improved somewhat, he is still unable to read, but hopes for a return of sight after taking further rest.

On behalf of its readers, GLEANINGS extends its cordial sympathy to the veteran who has done such successful service in the way of defense of bee-keepers, and the establishment of valuable precedents in law. The latter have been and can be used again most effectively against unjust legislation.

Hereafter the new organization will be known as the National Bee-keepers' Association—a two-in-one strong organization with a membership of toward 500, and between $500 and $700 in its treasury. It has already begun in the matter of prosecuting adulterators of honey, and will very likely in the near future have some startling developments to make, of work done. The organization is growing to be mighty, and its influence has been and will be a power for good; but it can not fight adulterators successfully unless it has a larger amount in the treasury. Send one dollar, and so help along the good work.

CAMERAS FOR TAKING HALF-TONES.

THE editor of the *Bee-keepers' Review*, in his January issue, in speaking about cameras for taking pictures, says:

> Pictures taken by the ordinary kodak, so called, are of but little value for use in taking half-tones. The greatest trouble is, there is no way for getting a sharp focus. The lens is the kind that is called a universal focus, which means that, whether the object be near or far away the picture thrown on the plate or film will be *passably* sharp, but that is all. To do really fine work, you need a camera that has an adjustable focus, so you can throw a focusing-cloth over your head, and, by observing the image thrown on the ground glass, adjust the focus so that the particular object that you wish to show is brought out with great sharpness and distinctness.

Bro. Hutchinson seems to have gotten a wrong impression of a kodak. Only a few of the cameras bearing that name are of the fixed-focus type; but their pictures are very sharp—much better than "passably sharp." But those of the adjustable-focus type of the *same grade*, and with the same stop, give no better results. There are high-grade kodaks of both kinds, and either gives the same sharpness of detail. Why, the smallest pocket size of fixed focus with a picture 1½×2 will make a picture so sharp that it can be enlarged to 10×12 inches. The sharpness of detail is dependent, not on the fixed or adjustable focus, but upon the *price paid*. All instruments bearing the name "Kodak" are of the highest grade.

There is this trouble with an adjustable focus: A person does not always get it set right. If the focus is universal, he is apt to get the very best the camera can give. But there is not a camera sold by the Eastman Co. but has "stops" by which the focus can be sharpened; and when *time* views are taken, some very clear effects can be secured by the kodak, with the advantage that *every thing* is in focus. I have one of the best Eastman kodaks that can be bought. It has an adjustable focus for objects nearer than 50 feet; and the lens, of the iris-diaphram principle, is so constructed that it can be stopped down from ½ inch to $\frac{1}{16}$, or what is called 128. It has ground glass and plate attachment as well as a daylight reloading-film device. Taking it all in all, it has the advantages of adjustable-focus instruments with dry-plate ground-glass attachments, and of the hand camera for taking snap shots of the highest order. The lens is so high grade that, even with a wide opening, and a snap-shot at that, I can get a good sharp picture; but let me say that some of the very best ones I took were instantaneous. When one attempts to take *time* views he is very liable to overtime or undertime; but if he follows the rule laid down for snap-shots and sunshine, he will secure fine effects almost every time.

BLACK BROOD IN CALIFORNIA.

I HAVE been suspecting for some time back that a sort of diseased brood, not foul brood, was working its way into different parts of the country; and when Dr. Howard, of Fort Worth, Texas, and the bacteriologist of the Division of Entomology, Washington, D. C., after a careful investigation, said the samples of diseased brood from the State of New York were not foul brood, but something else, then I began to suspect more than ever that the many samples sent us of brood, not *Bacillus alvei*, from *other States*, were this "something else."

Very recently a sample of brood was sent us from California. As it seemed to look very much like black brood, and was so very different in its general characteristics from ordinary foul brood, I sent it to Dr. Howard, asking him to examine it microscopically to determine whether or not it was the new disease; and if so, to send me a short report which I could append to the more extended one that appears elsewhere; but as it arrived too late, I give it prominence in this department. Dr. Howard says:

> The sample of diseased brood from Nicholas Spargo, Bishop, Inyo Co., Cal., has been received. The general appearance, the peculiar smell, the presence of the black pupæ, the dark and black *jelly-like* masses in this disease, in contradistinction to the dark coffee-colored *glue-like* masses of foul brood, are all material symptoms of black brood. The microscopical examination of the contents of a score or more of these cells shows the beautiful millet-seed forms, and the distinct typical arrangement of *Bacillus milii*, found in all the specimens heretofore examined, with no other germs present, which makes it all the more certain that this germ is the cause of this disease.

This explains the mystery; for I have had samples of this brood sent from all over the country, but did not know what they were; and I now feel more than confident that they were nothing more nor less than specimens of black brood.

All of this goes to show the very great importance of this present investigation on the part of Dr. Howard and of the officials of the United States government, and also of the importance of knowing more about it, and the specific method of cure that will handle this disease.

THE COLORADO STATE BEE-KEEPERS' CONVENTION.

THIS association, at its annual meeting, has, occasionally, addresses from professors at the State Experiment Station at Fort Collins. At this convention we had the pleasure of hearing C. P. Gillette, Professor of Entomology, and Dr. Headden, Professor of Chemistry. The latter gave us one of the best talks on the subject of honey, from the standpoint of a chemist, that I ever heard. Instead of using technical and scientific terms, he explained the whole in language that would be intelligible to bee-keepers and farmers, and those without special scientific training. I have secured from Prof. Headden a brief digest of this talk, and take pleasure in presenting it here :

Whatever sugars may be present in the nectar of flowers matters not in answering the question as to what sugars may be present in honey ; for it has been proven by direct experiment that the bee, in imbibing and disgorging the sugar, will invert as good as all of it, even though it be a pure cane-sugar syrup which is fed. Honey is essentially the solution of invert sugar composed of approximately equal parts of dextrose, levulose, and water. The name applied to such a mixture of sugar when it has been derived by action of a hydrolitic agent upon cane sugar is "invert" sugar, and when occurring as a natural sugar it is called fruit sugar. Usually there is but little cane sugar present in honey, especially in that deposited by the ordinary honey-bee.

Honey candies upon standing, because of the ability of the dextrose to assume a crystalline form much more readily than the levulose ; therefore, if the candied honey be subjected to sufficient pressure the greater portion of the levulose can be obtained, containing only a comparatively small portion of dextrose ; or a more convenient method is to place a portion of the candied honey on a sieve floated on a weak alcohol containing about twenty per cent of water, whereupon the levulose will readily pass into solution in the alcohol, leaving a mass of crystals upon the sieve, which are crystals of dextrose.

DR. W. P. HEADDEN.

If we take some of these crystals, dissolve them in water, and examine the solution by the aid of an instrument called a polariscope, we shall find that it turns the plane of polarization to the right. If we take the alcoholic solution and examine it by the aid of the same instrument, observing proper precautions, we shall find that this solution turns the plane strongly to the left. This is the reason that we have designated the sugars as right-handed sugar and left-handed sugar.

While the left-handed sugar, or levulose, can be obtained crystallized, it is with much more difficulty than in the case of the dextrose. If into a solution of dextrose there be introduced some crystals of this sugar the crystallization can be facilitated very materially ; and in our climate, where evaporation takes place rapidly, it is possible that we can bring about the candying of extracted honey by adding to it a small portion of already candied honey or crystalline dextrose.

Prof. Headden performed a series of experiments just as he would before a class of students. He had his polariscope, the use of which he explained and illustrated. He also exhibited some specimens of dextrose that had been secured by chemical means from honey. He next showed a vial of the levulose. The former looked like a very nice grade of light-colored brown sugar. The latter appeared like a very cheap grade of dark-colored molasses.

We next listened to an address by Prof. Gillette. Instead of going into details, explaining foul brood and how to cure it, he explained the nature of all contagious diseases. Any one who has any thing to do with foul brood, diseased brood, or any form of contagious disease, will do well to read this carefully. It will prove interesting as well as instructive; for it is made so plain that any bee-keeper will be able to understand it fully. This paper, taken in connection with what appears elsewhere on the subject of black brood, will help to make the latter very much more easily understood.

Foul brood has long been known as a true contagious disease. Such diseases do their most destructive work when they attack individuals that are crowded together in densely populated communities. The fact that the honey-bee lives in such communities, and the further fact that both the bees and their products are shipped freely from place to place, have made this a very serious and widespread malady. If it once enters an apiary, and nothing is done to eradicate it, it is almost certain that it will, in time, destroy every colony in its immediate neighborhood. Colorado's pure air and abundant sunshine seems to offer no impediment to the rapid development and spread of this disease, which is widely disseminated in the State. It is important, therefore, that all who keep bees should know the cause of this disease, its symptoms, its methods of dissemination, and also the preventives and remedies that may be used to lessen its destructive work. I presume most of you are better acquainted with the symptoms and remedies of foul brood than with its real cause and methods of dissemination, so I have chosen to dwell principally upon these latter topics.

The researches of the past thirty-five years, and chiefly of the past fifteen years, have shown that most, if not all, contagious diseases are the result of the attack of microscopic parasites upon some part of the diseased plant or animal.

Every one understands how it is that parasites such as ticks, lice, and mites that produce itch, scab, and mange, are conveyed from one host to another, and also how it is that the particular complaint accompanying each of these parasites could not occur in the absence of the particular parasite. Cholera, smallpox, diphtheria, and typhoid fever are also parasitic infections, but the organisms producing these diseases are so small that they can not be seen by the unaided eye.

On account of the minuteness of these organisms, requiring the aid of a compound microscope to enable man to see them, there are many people who think that the "bacilli" and "microbes" of which the scientist speaks exist only in his own fertile imagination.

What are these minute organisms? How do they increase in numbers? What do they look like under the microscope? and how do we know that they are the cause of contagious diseases? These are questions that I shall attempt in some degree to answer.

In the first place, it is conceded that these organisms belong to the vegetable kingdom in spite of the fact that they are able to move freely about in the moist media that they inhabit. They are closely related to such vegetable growths as rusts, smuts, mildews, and molds, with which all are more or less familiar.

Although micro-organisms are the cause of nearly all contagious diseases of plants and animals, these organisms are not all detrimental to man's welfare. Some are of the utmost importance. Without them there would be no decomposition of dead animal or vegetable matter, and the soil would lose its fertility.

There would be no fermentation, no souring of vinegar or milk, no ripening of cream or cheese.

These organisms vary greatly in shape. Some are merely oval bodies, being nearly as broad as long; others are cylindrical, or rod-shaped; of the latter, some are very short and others are long compared with their diameters. Others are variously curved, some taking the form of a spiral. All have the power of movement, and when seen alive under the microscope they are usually moving very rapidly about, often in countless thousands.

The germs of foul brood have been named *Bacillus alvei*. They are very large compared with most bacilli, and are in the shape of short rods of varying lengths. The longer ones have about the proportions of the half of an ordinary leadpencil. Although these germs are very large it would require 5400 of them placed end to end to reach one inch. Of the spores formed from the rods it would require 12,000 to span one inch. Some micro-organisms are so small that it would require more than 50,000 to span one inch when placed end to end. Perhaps it would be more intelligible to say that 1,800,000 of these spores could rest side by side on the head of a common pin. This will, at least, make it evident that there would be no use to look for these organisms with the naked eye or with any of the hand magnifiers. Nothing but a powerful compound microscope can reveal them to the human eye.

In 1850, Davaine, of France, discovered great numbers of minute rod-like organisms in the blood of animals dying of splenic fever, or anthrax. He considered these objects as one of the symptoms accompanying the disease, but did not think of such a thing as their being the cause.

A few years later, Pasteur, also of France, began a series of experiments to determine the cause of fermentation of beer and wine. He succeeded in proving, beyond question, that the real cause was the presence and growth of micro-organisms, and that without these organisms no fermentation could be produced. These announcements of Pasteur in 1863 led Davaine to suspect that the rods that he found in the blood of animals having splenic fever might be the cause of that disease. To test the matter he inoculated healthy animals with blood of diseased animals containing the germs, and found that he could produce the disease with great certainty So it was about 37 years ago that it was first proven that micro-organisms might be the cause of a contagious disease.

When Devaine's announcement was made there were very few, even among scientists, who would believe it. In consequence of this the experiments were carried through again with the utmost care by Dr. Koch, of Germany, in 1876, and by Pasteur, of France, in 1877. The results were so conclusive in proving that the bacilli were the real cause of the disease that Davaine's theory was generally accepted.

In the mean time, in 1865, Pasteur announced the results of his investigation of a terrible silkworm disease known as *Pebrine*, which threatened to destroy the silk industry of France, showing that this disease was also caused by a specific microbe.

These discoveries struck the key-note to the real cause of all similar diseases, whether in man, the lower animals, or in plants. It is one of the epoch-making discoveries of modern times. I will tell you briefly the process by which it is proven that a special microbe is the cause of a particular disease.

In the first place, it must be determined that the organism does not occur in the tissues of the healthy animal. Secondly, the microbes must always be found in the tissues of the animal having the particular disease in question. Thirdly, the organism must be taken from the tissues of a diseased animal, separated from the other organisms and grown through several generations. Then the organisms from the last culture must be inoculated into the tissues of a healthy animal, and cause the particular disease. Lastly, the tissues of this diseased animal must be found to contain the characteristic germ with which the experiment started. Such proof must certainly be conclusive. It is in this way that Cheshire proved foul brood to be caused by the organism that he named *Bacillus alvei*.

Now let us consider how these organisms can increase so rapidly as they must to cause the death of a large animal in a few days after they attack it, which is not an uncommon thing.

A single spore or rod of *Bacillus alvei* is sufficient to start foul brood in a colony if it is eaten by a larval bee, and a few weeks later the germs will be present in countless millions, and nearly all the brood will be diseased or dead. Cheshire estimated that a single bee-larva might contain a thousand millions of these germs. An illustration or two may help us to understand the enormity of this number. If each of the thousand million germs could be represented by a block an inch on a side, these blocks would be sufficient to build a wall an inch thick, 10 feet high, and more than 130 miles long. Again, if each of these microbes was a foot long, and they were all placed end to end, they would reach more than seven times around the earth.

The method of increase in these organisms is by division. One of the rods attains a certain length, and then divides into two rods. The two soon attain adult size, and divide, forming four. These four and all succeeding ones grow and divide in like manner, which gives an increase in geometrical ratio. A few minutes figuring will prove to you that, if one of these germs and its progeny divide every four hours, they will amount to a billion in less than five days. So, although the number is enormous, the manner of increase makes it possible to attain such numbers in a little time.

Appreciating to some extent the extreme minuteness of these organisms, and remembering that they are hundreds of times smaller than the smallest mote that we can see floating in a sunbeam, we are prepared to understand how they can float about with great readiness in currents of air. Micro-organisms are always about us, in the food we eat, the water we drink, and the air we breathe, but they are more abundant about cities and thickly populated communities than in more thinly populated places. Water exposed to the air always contains them. Experiments by Miquel, of France, showed that rain water contains 64,000 germs to the quart. Most of these germs are perfectly harmless; but when pathogenic (disease-producing) germs do occur in any place, it is easy to understand how readily they may be carried about upon one's hands or clothing, in milk or water, in letters through the mails, by insects such as flies and mosquitoes, and in similar ways.

There is a difference of opinion as to how the foul-brood germs are introduced into the bees. The popular belief is that they are taken into the alimentary canal along with the honey that the larval bee eats. This being the case, there should be large numbers of the germs in the alimentary canal in the early stages of the disease. Cheshire says that the germ almost never makes its attack in the alimentary canal. He thinks the germs come in contact with the surface of the body, begin to develop there, and then penetrate to the interior.

Foul brood was so named because of the offensive odor which usually accompanies it, and the supposition that it attacks the larval bee only; but Cheshire found that mature bees often succumb to the disease. He also states that queens of badly diseased colonies frequently have the disease, and that the eggs laid by them contain bacilli. Pasteur, in 1865, found that the eggs of the diseased female silkworm moths always contained germs of the silkworm disease, and that worms hatching from these eggs always died prematurely. If queen-bees can become diseased, it seems probable, then, that the eggs they lay would contain germs of the disease which would develop and destroy the future larva.

While there can be little doubt that the foul-brood germs are usually communicated to the young bees in honey given them as food, it may also be carried from colony to colony upon the hands, upon knives used to trim burr-combs, or upon boards or cloths or sections, or other furniture used in the hive of an infested colony. If a diseased colony becomes weak, it may be robbed by other colonies, all of which would probably contract the disease.

The symptoms of foul brood are quite characteristic. The larvæ lose their pearly whiteness, gradually changing to a coffee color, finally turning black, and drying down to a mere scale at the bottom of the cell. The coffee-colored mass that the larva changes to is entirely shapeless, showing none of the structure of the grub; and if a sliver or pin be used to remove it from the cell it will stretch out for some little distance, and then snap back. If the larva is nearly grown before the disease attacks it, it may cap its cell, and then, after it dies, the capping usually sinks, and often has a hole at the center. When mature bees are attacked they weaken and die, but retain their form.

You are familiar with the methods of treating this disease as given in the State law, in bee-journals, and by county inspectors, so I shall not take time to treat this phase of the subject, except to warn all, especially beginners, against any attempts to *cure* the disease. You will do better to bury or burn the entire colony as soon as found to be diseased.

OUR HOMES,

BY A. I. ROOT.

Well done, good and faithful servant; thou hast been faithful over a few things, I will make thee ruler over many things.—MATT. 25:23.

Some of you may smile to think that I have got down to my old text again; but I run against so many people all the time who need exhortations in the way of grasping hold of the things right before them, studying out the whys and wherefores of the strange events and the teeming life that is going on everywhere, that I feel there is more need of exhortations along this line than in almost any other. Some time ago Ernest placed a little pamphlet on my table, and marked it, "Read this right away, and be sure you read every word of it.—E. R." I accordingly read it all through, although I had read the same thing, at least by extracts, several times before. A few days afterward our good friend Jenkins, of Wetumpka, Ala., sent me the following:

Dear Friend:—It is good to get a letter once more, signed "A. I. Root." It reminds me of old times.

A short time ago I ran across an article in a newspaper, which strongly emphasizes some of the points which you have from time to time brought out. Possibly you have seen it. At any rate, I inclose it, thinking perhaps you have not, and thinking that perhaps you may use it or part of it in your work. I liked the piece so well that I carried it in my pocket for some time, showing it to different ones, until I came near wearing it out before sending it to you.

Wetumpka, Ala., Jan. 24. J. M. JENKINS.

The inclosure referred to in the above was the same as the pamphlet Ernest recommended, and it is a little work you may have read, entitled "A Message to Garcia." It is very prettily gotten up in quaint old-style type, full of ornaments, and printed on heavy deckel-edged paper; and we are just now told that, up to Jan. 1, 1900, 1,021,000 copies have been sold. If you want one to give away, to hand to the children, or to make use of in some other good way, send 10 cents to The Roycrofters, East Aurora, Erie Co., N. Y. By the way, I have obtained permission of the publisher to copy it here, so here it is:

MESSAGE TO GARCIA.

In all this Cuban business there is one man who stands out on the horizon of my memory like Mars at perihelion.

When war broke out between Spain and the United States, it was very necessary to communicate quickly with the leader of the insurgents. Garcia was somewhere in the mountain fastnesses of Cuba—no one knew where. No mail nor telegraph message could reach him. The President must secure his co-operation, and quickly.

What to do!

Some one said to the President, "There's a fellow by the name of Rowan will find Garcia for you, if anybody can."

Rowan was sent for and given a letter to be delivered to Garcia. How "the fellow by the name of Rowan" took the letter, sealed it up in an oil-skin pouch, strapped it over his heart, in four days landed by night off the coast of Cuba from an open boat, disappeared into the jungle, and in three weeks came out on the other side of the island, having traversed a hostile country on foot, and delivered his letter to Garcia, are things I have no special desire now to tell in detail.

The point I wish to make is this: McKinley gave Rowan a letter to be delivered to Garcia; Rowan took the letter and did not ask, "Where is he at?" By the Eternal! there is a man whose form should be cast in deathless bronze and the statue placed in every college of the land. It is not book-learning young men need, nor instruction about this and that, but a stiffening of the vertebræ which will cause them to be loyal to a trust, to act promptly, concentrate their energies: do the thing—"Carry a message to Garcia!"

General Garcia is dead now, but there are other Garcias.

No man who has endeavored to carry out an enterprise where many hands were needed, but has been well nigh appalled at times by the imbecility of the average man—the inability or unwillingness to concentrate on a thing and do it.

Ship-shod assistance, foolish inattention, dowdy indifference, and half-hearted work seem the rule; and no man succeeds, unless by hook or crook, or threat, he forces or bribes other men to assist him; or, mayhap, God in his goodness performs a miracle, and sends him an Angel of Light for an assistant. You, reader, put this matter to a test: You are sitting now in your office—six clerks are within call. Summon any one and make this request: "Please look in the encyclopedia and make a brief memorandum for me concerning the life of Correggio."

Will the clerk quietly say, "Yes, sir," and go do the task?

On your life, he will not. He will look at you out of a fishy eye, and ask one or more of the following questions:

"Who was he? Which encyclopedia? Where is the encyclopedia? Was I hired for that? Don't you mean Bismarck? What's the matter with Charlie doing it? Is he dead? Is there any hurry? Shan't I bring you the book and let you look it up yourself? What do you want to know for?"

And I will lay you ten to one that, after you have answered the questions, and explained how to find the information, and why you want it, the clerk will go off and get one of the other clerks to help him try to find Garcia—and then come back and tell you there is no such man. Of course, I may lose my bet; but, according to the law of average, I shall not.

Now, if you are wise you will not bother to explain to your "assistant" that Correggio is indexed under C's, not in the K's, but you will smile sweetly and say, "Never mind," and go look it up yourself.

And this incapacity for independent action, this moral stupidity, this infirmity of the will, this unwillingness to cheerfully catch hold and lift, are the things that put pure Socialism so far into the future. If men will not act for themselves, what will they do when the benefit of their effort is for all? A first-mate with knotted club seems necessary; and the dread of getting "the bounce" Saturday night holds many a worker to his place.

Advertise for a stenographer, and nine out of ten who apply can neither spell nor punctuate—and do not think it necessary to.

Can such a one write a letter to Garcia?

"You see that book-keeper?" said the foreman to me in a large factory.

"Yes, what about him?"

"Well, he's a fine accountant; but if I'd send him up town on an errand he might accomplish the errand all right, and, on the other hand, might stop at four saloons on the way; and when he got to Main Street he would forget what he had been sent for."

Can such a man be entrusted to carry a message to Garcia?

We have recently been hearing much maudlin sympathy expressed for the "down-trodden denizen of the sweat-shop" and the "homeless wanderer searching for honest employment," and with it all often go many hard words for the men in power.

Nothing is said about the employer who grows old before his time in a vain attempt to get frowsy ne'er-do-wells to do intelligent work; and his long, patient striving with "help" that does nothing but loaf when his back is turned. In every store and factory there is a constant weeding-out process going on. The employer is constantly sending away "help" that have shown their incapacity to further the interests of the business, and others are being taken on. No matter how good times are, this sorting continues; only if times are hard and work is scarce, the sorting is done finer—but out, and forever out, the incompetent and unworthy go. It is the survival of the fittest. Self-interest prompts every employer to keep the best—those who can carry a message to Garcia.

I know one man of really brilliant parts who has not the ability to manage a business of his own, and yet who is absolutely worthless to any one else, because he carries with him constantly the insane suspicion

> that his employer is oppressing, or intending to oppress him. He can not give orders; and he will not receive them. Should a message be sent to Garcia, his answer would probably be, "Take it yourself, and be ——!"
>
> To-night this man walks the streets looking for work. No one who knows him dare employ him, for he is a regular fire-brand of discontent. He is impervious to reason, and the only thing that can impress him is the toe of a thick-soled No. 9 boot.
>
> Of course, I know that one so morally deformed is no less to be pitied than a physical cripple; but in our pitying let us drop a tear, too, for the men who are striving to carry on a great enterprise, whose working hours are not limited by the whistle, and whose hair is fast turning white through the struggle to hold in line dowdy indifference, slip-shod imbecility, and the heartless ingratitude which, but for their enterprise, would be both hungry and homeless.
>
> Have I put this matter too strongly? Possibly I have; but when all the world has gone a-slumming I wish to speak a word of sympathy for the man who succeeds—the man who, against great odds, has directed the efforts of others, and, having succeeded, finds there's nothing in it; nothing but bare board and clothes.
>
> I have carried a dinner-pail and worked for day's wages, and I have also been an employer of labor, and I know there is something to be said on both sides. There is no excellence, per se, in poverty; rags are no recommendation; and all employers are not rapacious and high-handed, any more than all poor men are virtuous.
>
> My heart goes out to the man who does his work when the "boss" is away, as well as when he is at home. And the man who, when given a letter for Garcia, quietly takes the missive, without asking any idiotic questions, and with no lurking intention of chucking it into the nearest sewer, or of doing aught else but deliver it, never gets "laid off," nor has to go on a strike for higher wages. Civilization is one long anxious search for just such individuals. Any thing such a man asks shall be granted; his kind is so rare that no employer can afford to let him go. He is wanted in every city, town, and village—in every office, shop, store, and factory. The world cries out for such; he is needed, and needed badly—the man who can carry a message to Garcia.

You know, friends, I have been furnishing employment to a great number of people almost all my life, and I have studied ways and means to open up employment to those whom we can not take into our institution. I have written a book on the subject, as you may know. Well, this world is full of wants everywhere. There certainly is not any good reason for saying you have nothing to do, and, I almost said, not even if you are deaf or blind or crippled. We have plenty of instances of such people who have made their mark in the world. I need only suggest the name of Helen Keller. Pardon me for repeating once more some things from my own experience.

Some of you know of my craze for the bees in the earlier years; and I could not tell you, even if I tried, how I enjoyed following the subject up day and night until I was well abreast with what is known in almost all the world in regard to bees. Then as market-gardening was only another branch of rural industries, in my efforts to find something to do for the boys, I studied that, and visited the most successful plants devoted to high-pressure gardening that we have in this part of the world as well as in California, Florida, and in Bermuda. I enjoyed that, too, as I did the bees; and as it gradually unfolded little by little in response to my researches, I was appalled that people should remain idle, go hungry, yes, and *starve to death*, with the possibilities God has placed before us.

I have talked with several of our missionaries about the starving people in China. It is in consequence of their severe drouths. They have plenty of water every year—in fact, *too much* of it. All these people need to do, in order that they may have plenty and to spare, is to construct reservoirs, and save up the water when there is more than anybody wants, until the time of need. But they do not like the *responsibility* of laying up something for a rainy day, or rather, perhaps, for days and weeks when it does not rain.

Oh! we do not need to go to China to find helpless people. I suppose I shall now hurt somebody's feelings by choosing some illustrations nearer home; but any successful business man will tell you the most good he ever *received* was from somebody who talked *plainly enough* to hurt his feelings. There is one passage in the above Message to Garcia which made me smile, and I guess each member of our firm smiled when he read it, and remembered at the same time some of our experience here in the office. The passage is as follows:

> Advertise for a stenographer, and nine out of ten who apply can neither spell nor punctuate—and do not think it necessary to.

Our young people go to school and learn book-keeping. Their parents send them away from home to commercial colleges. Oftentimes the father and mother get up early and work late, and scrimp and save to keep the girl or boy in college. Now the college and schools are all right. The young stenographer does very well, perhaps, when he is taking down something with which he is entirely familiar; but let him get out of his ordinary run, and then what? Why, he has to get a dictionary, and spend a great part of his employer's time in thumbing it. In regard to punctuation, I have at times wondered whether they taught it in *any* of the schools nowadays as they did when I was a boy. Well, the boy or girl with the dictionary, and much prompting, gets over the spelling and punctuation, but the letters do not make sense. The employer says:

"John, did you read this letter over before you brought it to me?"

"Oh, yes! certainly."

"Do you always read your letters before you send them off?"

"Why, yes. I almost always do unless something is in a great hurry."

"Did you read this letter?"

"Yes, sir."

"Well, do you know any such word as that? or is there any sense to that sentence?"

John admits he never knew such a word, and he also agrees that he can not see any sense in the sentence. But he may add:

"That is just what you said, and so I put it down."

Now, I do not mean to say the employer never makes a mistake in dictating. If he is very much crowded it would be nothing unusual; but there are certain mistakes that a man would never make, and a little reflection should show the stenographer that he would not.

During the rush of business in the spring it is sometimes exceedingly important that the stenographer should catch something quick as his employer rushes through the room. In order to do this he should not only have *one* pencil sharpened, but half a dozen of them, right at hand. He wants his blank book open at the right place, and a date over every day's transactions, so that, if his employer tells him to get off something very brief before the mail has gone, he can do it *in one minute.* Now, I have explained this to our clerks over and over, and some of them have caught on, and are always ready; but there are others, notwithstanding frequent failures in the same line, who will have to hunt for a book; then they will turn the pages before they get to the right place, then open drawers, or feel in all their pockets, or tumble around a lot of loose papers to find a pencil; and these same clerks are, a great part of every day, addressing wrappers (or something of that sort) in order to keep them busy. May be they have no aspirations in the way of getting a raise Saturday night; but it is more likely that it does not *occur to them* that the very best way in the world to get a raise is to show their employers how quickly they can get off a message, and get it *right.*

Again, at this season of the year we always have an abbreviated price list of seeds. This is put into every envelope, to save answering questions. To make sure this was in every envelope I had a lot folded and put into a large number of envelopes. Then I could just say to a customer, "The inclosed leaflet gives you the price of the seed you mention, and the little pamphlet (*also* inclosed) tells you all about the plant, and how to grow it—quantity of seed per acre, etc." Now, with too many of our clerks (mind you, not *all* of them) the *letter* would get to the customer all right, but the *leaflet* containing the prices would not be in the envelope, nor the pamphlet. The excuse given for not using the envelopes with the price list already placed in them was that they did not work well while addressing them in the typewriter. The clerk *forgot* to put the things into the envelope, even after he told the customer he would find one inside.

Some of my Christian friends will say right here, "O Mr. Root! do not be too hard on the clerk. He forgot to put in the things you mention, and we are all liable to forget." To which I reply, "Very true; but when this thing goes on day after day with the same person, what would you do then?" * The trouble is, so many *will not* assume responsibility. If you wish to be of assistance to your employer, step into his shoes long enough to see how many things he has to keep an eye on, then see if you can not take his place, at least to *some* extent, and relieve him of some of the responsibility; and especially make it a study to be sure that no forgetfulness or half-heartedness on your part *adds* to his already many busy cares.*

Oh! it is not the Medina boys and girls who alone are responsible for such work. I once wrote to a large manufacturing establishment, asking the price of a steel shaft that I wanted at once. They replied I would find the very thing I wanted, described and priced on the card inclosed in the letter; but no card was in the letter, nor in the *second* one in reply to my protest, so I sent my order somewhere else. I really preferred their make of shaft.

When I attended a convention in Buffalo I was called as a witness in regard to a suit in which sweet clover was called a noxious weed. A young lady stenographer was to take down my statements. A smart young lawyer suggested to her, by way of caution, that I would probably use technical terms she was not familiar with, and requested her to be very careful to get it down correctly. He also requested me to speak very plainly when using such technical terms, and spell the words for her when she required it. She took it down very rapidly, and seemed to be quite an expert; but when I came to read my report as she rendered it I actually could not, for the life of me, get at what I had been trying to tell her. Frank Benton, who was on the same case, told me that was exactly his experience. He had to cross out a great part of what she had written, and write himself what he wanted to say, as nearly as he could remember.

Now, there is another point right here. Sometimes "silence is golden;" but I know of quite a few boys and girls who would get much better pay if they would talk to their employer, ask questions about his business, and try to look at things from the point of view he is taking. Why, I always feel *glad* when some of my helpers ask for an explanation so that they may be able to use their brains instead of going to work like a parrot.

Now, I am not going to find fault in this talk, all the time, any way. We have some as bright and smart Medina boys and girls here on our premises as there are in the world. If you were here I think I could make you admit it. Sometimes a stranger comes here and wants work. He says he has spent all his life with wood-working machinery, and thinks he can run any machine we have on our premises. He thinks he is worth $3.00 or $3.50 a day; but when we put him in beside some of our expert boys, or a Medina boy of eighteen or twenty, who has been with us, say half a dozen years, the boy will beat him all to pieces at any thing he may touch. The old mechanic, you see, is of the class that goes about here and there, and can not find a steady job. The boy is one of the stripe who would find even *Garcia* if his employer set him at it, and he would use his brain as well as his muscles.

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* When a boy about a dozen years old I was very forgetful. A very good and wise teacher gave me a talking-to that, even though it made me cry, did me a lot of good. He would not have been thus severe had he not been deeply anxious that I should get over my infirmity, and become a good and useful man. What made me cry was because he said the reason I forgot was because I did not *care* enough about the matter; and, my friend, let me say to you in the same way, the reason why you forget, day after day, that which your employer has very plainly asked you to be sure to remember, is because you do not *care* enough about your employer, your work, your place, or your future advancement. The Bible says, "Blessed are they who hunger and thirst after righteousness;" and righteousness means doing right. When you really *hunger and thirst* after advancement or, if you choose, *right doing*, your reward will come.

* Some one may say right here, "Oh! it is very well for *you* to find fault with clerks; *you* are the boss, and they are the unknown, perhaps uncared for, hired help." To which I reply, that these criticisms are for their own good, and not for my own particularly. I am anxious—yes, I am glad—to see them advance, and in their turn take charge of other helpless people. Some who commenced with us as typewriters have progressed, and have now large establishments of their own; and may be they thought I scolded a good deal away back years ago; but I should not be surprised if one or more of you who read this will say now you owe me a vote of thanks because I *did* urge you to be more careful and more accurate.

We have some young men with us of whom I should like to tell you something if I could do it without mentioning their names or letting anybody know who it is I have in mind. I say this because they might run on him or become jealous of him if I should tell just how diligently he (or *she*) has been using his hands and intellect. In such an establishment as this there is no end of things that need looking after and repairing. There are steam-pipes, water-pipes, and air-pipes that are liable to leak. The air-pipes are connected with the automatic sprinklers. A great many of these things, no one knows how to do except the foreman of the machine-shop; and unless it is something very serious and complicated, we dislike to take him from his post where he has charge of very important work and of a good many helpers. Well, we have tried again and again to find somebody who would hunt up a leak and repair it, and do it without objecting, and asking why John would not do just as well, or something of that sort. Well, there is one whom I have in mind who is a very good-natured fellow. I think I have known him since he was five or six years old; and although he has been most of his life in our employ, I never saw him look sullen, and I do not think he ever objected to any thing I ever wished him to do. If a sewer was stopped up, and a man was needed to crawl head first down into the sewer, he would do it and look good-natured all the while. Well, some time ago he began to develop an unusual trait. He never gave up to any sort of job. If the construction of some underground or out-of-sight work was something he did not understand he would ask questions about it until he knew all anybody could tell; and if it was necessary to take something apart that was complicated, and something with which he was entirely unfamiliar, he would say, "Now, Mr. Root, I do not think you need to bother anybody about this—that is, if you can afford to give me a little time. I think I can work it out and get it all right." Where another man would declare some expensive digging would *have* to be done, this fellow would say, "No, I would not go to that expense—not just yet, anyhow. We will try to get along without it." and he gets along without it every time. He never says, as some do, "Oh, yes! I can do that all right—no trouble at all;" but he always prefaces his remarks this way: "I *think* I can do exactly what you want, but it may take a little time; and if you decide to let me try it, I will do the best I can." Sometimes he asks for certain helpers who have the right sort of spirit, and who he knows, by past experience, will work in harmony with him.

Every little while I am surprised to find he is pretty well posted in regard to some branches of mechanics that I supposed he knew nothing about; and then I learn he employs his leisure moments in storing his mind with valuable facts that will likely be useful to him in his work. Again and again I have concluded to let him try his hand at something I had been assured by competent authority could not be done; but so far there has been *no* failure. When I express astonishment that he has secured the result we wanted, and did it in so short a time, I often ask for more particulars, and for the details that enabled him to do the thing that seemed impossible; and then I invariably find some ingenious short cuts that no one but himself would have thought of. Still more, he never miscalculates the strength of materials or tools, and makes no expensive breaks, thus necessitating calling in outside help.

Let me now sum up briefly some of the qualities that are needed in this day and age of ours. First, we want somebody who is pleasant and good-natured. "He that ruleth his own spirit is greater than he that taketh a city." Do not stop to inquire whether you are *hired* to do this, that, or the other. Secondly, we want, or, if you choose, the *world* wants, young people who do not rest day or night until they have the knowledge that belongs to their particular calling at their fingers' ends. If any one who sees this wants a situation as stenographer, do not think of applying for a place until you can spell and punctuate, and read understandingly after you have written it (that is, so far as spelling and punctuation go) every thing you take down. Thirdly, be ready to do any thing or put up with any thing that can not very well be helped, in order to push along the business that lies before you. If you have spare time, study up every thing pertaining to your work. Finally, remember it was the great Master who said, "Thou hast been faithful over a few things, I will make thee ruler over many things."

HIGH PRESSURE GARDENING

BY A. I. ROOT.

SOME GLIMPSES OF THE LITTLE GREENHOUSE I HAVE BEEN TELLING YOU ABOUT.

You see I wanted Ernest to make a picture of the little salvia, and I wanted it taken in such a way as to show the relative size of the pot in which the plant grew and the plant itself. He said I would have to tip it over on its side in order to give a view of the spread of the foliage beyond the edges of the pot. So I placed it as you see in the cut. Now, this little pot it is growing in is an ordinary "thumb pot" just about big enough for a man's thumb to go inside of it. All the soil it had to grow in was a teaspoonful of jadoo and another of sand packed in close. The plant above it is the parent. When I first received it from John Lewis Childs, one little sprig was broken off in the mails. I had just finished my forcing-bed, and the plant was hastily stuck in some wet sand. Not a leaf withered or faded, and it commenced growing and kept on growing. When it had roots half an inch long it was potted as I have told you, in the little pot, and watered (just before blooming) with jadoo liquid. The plant is now at this date, Feb. 8, in full bloom with quite a cluster of fiery scarlet flowers. In order to produce a background for the golden-hued leaves in the upper plant, I held a stone platter just back of it. In the background you get a glimpse of one of my favorite azaleas. In the larger picture you get a view of two of the azaleas; and the one near my elbow is at the present time covered with blossoms. Next to it stands a Norfolk Island pine. There is only one spot on the face of the earth where these will grow in the open air. They can not bear the hot sun. Near the post is a rubber-tree. Back of the post is the machinery that raises and lowers the front sash. Next to the edge of the bed where I am sitting is a row of carnations, all different. Between the carnations and the azalea there are 39 different kinds of roses. The Meteor now is budded, and the buds partly open. The geraniums, begonias, and other plants, I need not name, because you can recognize them in the picture.

THE GOLDEN-LEAVED SALVIA THAT GREW SO FAST, AND WHICH IS NOW IN BLOOM IN A THUMB POT.

Just in front of me is a bed of Grand Rapids lettuce-plants. The next day I sold the whole bedful for $5.00, and they had occupied the bed scarcely more than 30 days. I had no thought of having my own picture; but after Ernest had taken the salvia he turned his instrument over toward me, and did not even give me time to straighten up my eyeglasses nor to button up my overcoat. Quite a few of the friends have complained sometimes because they did not have a good picture of the writer of the Home Papers. Well, I think you have got it now, just as I look in my every-day attire.

Oh how I should love to take the women-folks, who read GLEANINGS, through all that little greenhouse! and I could tell them quite a little story about almost every plant. When we get to the roses I should like to have Dr. Miller along with the women-folks, because he is an enthusiast on roses. And, by the way, who would ever suppose that a rosebush would grow a foot in only five or six weeks? When my little granddaughter Mildred comes over to see me she almost always wants to see the roots of every plant as well as the tops; and I suppose she would be glad to have me tip the big orange-tree out of its pot to show her the roots as well as the top. The tree had eight oranges on it, but the grandchildren and myself ate four of them, and there are now four left.

Oh! just one thing more. I am so much delighted with the jadoo fiber for growing cuttings, and, in fact, for growing every thing, that I want somebody to share the pleasure with me; and I am therefore getting ready to mail a sample package to every lady who reads GLEANINGS, if she will just send word on a card that she is interested in house-plants, and would like to try some jadoo fiber. We use it one-fourth or one-half sand. Of course, you can get the sand at home. Jadoo can be sent for a small amount of postage, because when dry it is exceedingly light.

When I was out on one of my wheelrides last fall I called on a relative who had just been building a fine house in Tallmadge, Summit Co., O. Not finding the family at home I took the liberty of looking over the new house with its modern comforts and appliances as well as I could from the outside, taking the liberty of looking in the windows. I know this looks a little on the tramp or burglar style; but as I was very well acquainted I made myself quite at home—that is, as well as I could with the doors all locked. Well, on looking in at a newly modeled bay window I caught a glimpse of some plants that made me so happy at the time that I felt the influence of that brief glimpse for a long time afterward; yes, and I feel it yet. The sight that attracted my attention particularly was a group of colei. I did not know what particular variety at the time, but I found out afterward. It is what is called Sunset. At my next visit my cousin gave me a slip, but I did not know how to handle such things then, and of course it died. Then I bought some plants, and *they* died. Come to think of it, I believe there is a remnant of one Sunset coleus growing yet, and by the time warm weather comes it *may* pull through. I bought Sunset colei at different greenhouses, but I did not find any thing quite up to what I saw in that bay window until I got a plant of W. H. Murphey, Minooka, Ill., and one that is all my imagination pictured, and even more too. In fact, I go out to the greenhouse and take a look at it ever so many times a day, and feel happy; but in order to keep its gorgeous coloring I have placed it in the cutting-bed where the air is damp, and the temperature somewhere between 80 and 90 the greater part of the day. The center of the leaves is a brick red, changing to orange and purple. All around the edge of the leaf there is a "silver lining" or rather, perhaps, a "golden" lining, such as you sometimes see far in the west, just as the sun is going down. The edge of the cloud seems to be of burnished gold. Well, this leaf has that look. The leaves near the center, that are just starting out, have all the hues of the most delicate coloring of fruit—say a luscious peach when it is putting on its marvelous tints. Then the leaves are downy enough to give it a glow, when the sun strikes it just right, like the most gorgeous silken plush. I have only this one plant that comes up to my ideal of a Sunset coleus. I am still buying plants to see if I can get any more to equal it. If I can not, I am going to make cuttings from this one.

Now, there is just one more coleus that is a fit companion to the Sunset. It came from the same place. Right around where the stem adjoins the leaf, there is a delicate pinkish white; but near the center of the leaf is a bright dazzling purple bordering on the most brilliant indigo blue. Then the outer edge of the leaf, which is fringed, is bordered with a vivid green; and the effect is to give the plant an air that reminds one of oriental kings and princes. I see by the catalogs that they have a new coleus called the Empress of India, and I think this plant would fit the name to a dot. It makes one think of the stories in the Arabian Nights; and it also makes me think still *more* of the words, "But I say unto you that Solomon in all his glory was not arrayed like one of these."

I do not just understand why it is I am drinking in day by day so much happiness and enjoyment from the care and culture of these plants; but something seems to say to me that the great Father has a purpose in it all; that he has a mission for me to fill. I often thank God that this new pleasure he has given me does not cost very much money. These two colei that I prize so highly cost only a few cents each. I begin already to per-

THE AUTHOR OF THE HOME PAPERS AMONG HIS PLANTS IN THE GREENHOUSE.

ceive one pleasant feature in this new experience; and that is, that my writings along the line of flowers are getting me acquainted with the *mothers* of our land, perhaps in a way I never got acquainted with them before. I am also getting in touch with some of the fathers as well. In fact, we are just told that the father of our country spent much of his time, and found much enjoyment, in a little greenhouse, and that this greenhouse is still kept in trim out of respect to the memory of George Washington. The paths and beds that he made are still kept much as he left them.

I want to say a little more about that forcing-bed. It is a revelation to me. As it is opened and closed so many times a day, the 3×6 sash is hinged on the back side. A coiled wire spring is attached to the front edge, and then overhead toward the back side, so it holds the greater part of the weight of the sash. It takes but little effort to raise it with one hand, and when up it is caught by a latch that holds it out of the way while I look after and care for the plants. Not only can you make a shoot of almost any thing take root in damp or wet sand placed in this bed, but you can start the most delicate seeds, and make them grow, so far as my experience goes, without a failure. We sowed a paper of Giant Rainbow coleus seed. It was simply sprinkled on the surface of sifted jadoo, and then pressed down with a board. In a very brief time every seed had germinated. About the middle of January we had orders for every Grand Rapids lettuce-plant we had in the house, and more too; in fact, we had to return money, and so it became necessary to get some more lettuce-plants just as soon as possible. Well, we put four rows of lettuce seed in this forcing-bed. In four days they were up, and in four days more they had to be transplanted to a larger bed. It is true, they did not have their second leaves on; but where seed is sown in jadoo, when we take them up every little plant carries a lump of jadoo on its roots; and this enables them to be transplanted with perfect safety. Of course, we should give the seedling plants more room if space were not so valuable. We have at present only one forcing-bed, 3×6 feet inside, so every square inch of room is pretty well occupied with drooping plants or seeds and cuttings.

We have just been transplanting our Rainbow colei. I believe the usual way is to put them into thumb pots; but we are planting them out with a little spacing-board similar to what we use for cabbage, celery, and tomatoes. We are not going to the trouble of putting them into pots until we select the handsomest. Some may object to plants that are started under the influence of such a high temperature and such a constant damp atmosphere; but from many experiments I am satisfied it does not make any difference how your plants are started. In fact, the rankest and strongest growth you can get while in the seed-bed is all the better. When they are big enough to move, lower the temperature, give them more air, then transplant them into a bed where the heat and moisture are considerably less than where the seeds grew.

Finally, when you get good roots by the forcing process put them in beds outside, and gradually give them the outside air whenever the weather will admit, and also gradually accustom them to the full blaze of the sun, without protection. If you care enough about them to watch them carefully and study their wants, you can make the very best of plants by the time they are ready to be put out in the open air — that is, if you start them early enough. A plant that has lots of roots, and has got well down into the ground, will stand a tremendous freeze without injury, compared with a plant that is weak and feeble, and has been so, all its life.

Somebody asks me to tell how to harden off rapid-growing tender plants. Well, the above tells it as plainly as I can in print; but you will all have to learn it by practice. Move your shutters off and on as the weather changes; tuck your plants up tight and warm during frosty nights, and then give them all the sun they will stand without injury during bright days. Not all plants can be managed alike. Tomatoes and colei require a very different temperature and treatment from cabbage and celery plants.

When the sun gets to be too hot in the middle of the day, do not try to remedy the matter by taking off the sash or sliding them back. Let your sash remain down tight over the plants to preserve the damp air inside; but cut off the sun temporarily with a shutter or strip of cloth, or even a newspaper. A cloth or newspaper is better than a shutter, because it lets in some light; but outdoors we are bothered by the newspapers blowing away. Inside of the greenhouse they are just the thing when the sun is too hot on the forcing-bed. Since the above was written I have learned that the dark coleus-plant I have described is "Crist Beauty."

GOVERNMENT SEEDS.

We have been assured of late that the seeds sent out gratuitously by the government were to be new and novel varieties, such as people would not usually get of seedsmen. A lot has just been received, addressed to A. I. Root, Medina, O. The packets are labeled as follows: Radish, Chartiers; Beet, Eclipse; Onion, Yellow Globe Danvers, and so on all through. Every variety mentioned has been on the market, and well known, for ten years past at least. In fact, we have cataloged them and sold them for nearly all that time; and yet they send me, a seed-dealer, all these things, when I catalog and sell the very same seed in quantities! Whose hard-earned money is it that the government persists in wasting year after year in this manner?

TEMPERANCE AND THE ANTI-SALOON LEAGUE.

Deceitful workers, transforming themselves into the apostles of Christ; and no marvel; for Satan himself is transformed into an angel of light.—II. COR. 11 : 14.

As the above league begins to push its way closer and closer into the dens of infamy, the brewers and the liquor-dealers are becoming more and more desperate. Just one illustration. The brewers of Cincinnati hired a fascinating young woman (of course one without a conscience) to undertake the task of breaking down the morals of the superintendent of our Ohio Anti-saloon League, Rev. P. A. Baker, of Columbus; or if they could not break him down they planned to get him into a compromising predicament. They placed thousands of dollars at the woman's command, and gave her testimonials that any one would consider sufficient. She secured a place among the clerks in the office of the Anti-saloon League as typewriter. By her pleasing address and rare skill and accomplishments as a business woman she deliberately won the good opinion and respect of all the clerks and employees. When she had gone far enough in this line she informed Mr. Baker that several thousand dollars had been left her, and wished him to advise her about putting it out at interest. Of course, he gave her what assistance he could, and the money was soon satisfactorily put out at interest. Mr. Baker soon became suspicious, however, that she was in the employ of the enemy, and let her go on until she showed her colors. Then he obliged her to sign an affidavit admitting that she was hired by the brewers and liquor-men. This affidavit has been published through the papers. The villians, judging by their own depraved hearts, concluded that if they could find a woman with proper accomplishments who would lend herself to their scheme, they would be sure of victory, not dreaming there are *Josephs* in these latter days, in the way of unflinching integrity, as well as in olden times. Since their scheme has come to light, I have been watching for something in the papers to justify or deny the charge against them; but so far I have not seen it.

Just one thing more: Some time ago I got to thinking that, if the whiskey-men would combine with the tobacco-growers and dealers to get out a popular piece of fiction that would have a big run, defending tobacco, beer, and expensive liquors, it might help their hellish traffic and defeat Christains and temperance workers quite a little. Well, they have done this thing already, and it occurs to me that Satan himself stepped forward and made the third one of the trio. What part did he undertake, do you ask? Well, I can imagine him saying, "All right, brethren, go ahead. You get up the book, and I will manage to get the ministers and the ministers' wives and prominent church people to read it and recommend it to their friends. Oh! don't you worry; just give me a chance, and see if I do not do that very thing." And Satan succeeded. The book is called "David Harum." I read the first chapter, and threw it down, declaring I could not waste my time with any book that did not uphold righteousness and temperance. A very good friend of mine, however, and a Christian man of scholarly attainments, urged me to have patience and read the book clear through. I did so, only to find a mock regard for the kind of religion that narrows its scope down to befriending the widows and fatherless, without any Christ about it. I found it a book that not only casts ridicule on professing Christians, but upholds swindling and swapping horses (even on Sunday), upholds tobacco in all its forms, recommends beer and high-priced liquors, together with tobacco, as sensible and consistent remedies for despondency, and thinks it a fine thing to persuade old ladies, who are members of temperance societies and professing Christians, to learn to drink champagne; yes, and it describes champagne, its taste and effects, so that every schoolboy and perhaps many a school*girl* too would have a curiosity to taste it to *see* if it is like what the book describes.

Humbugs and Swindles.

Mr. Root:—I am bothered by this swindler every week or so with these circulars. See how cleverly he imitates type-writing. I wish you would show him up.

H. M. JAMESON.

Corona, Cal.

The circular inclosed comes from Marshall, Mich. It is about electric belts. The reason why the great professor sent so many letters is, I take it, that he first offers his wonderful belt for $20. A few days after, he comes down to $12; then he sends another letter giving some exceedingly good reasons why he will sell the whole thing for $5.00 if you take it right off *now*. Now, my good friend J., fishermen do not keep right on casting bait unless they get a bite *once* in a while. This fellow has been getting bites or he would not keep sending out circulars. Perhaps he has not found out yet that the "absent-treatment" professors are beating all the electropoises, electric belts, etc., by performing most astounding cures without *any* medicine or make-believe apparatus or any thing else. They never see their patient, and in some cases we know they do not *even read the letter* the patient writes; but the patient gets well, and the professor gets money hand over hand. We are told there are some people who can not see through a tub after the bottom has dropped out May be they will after a while—at least we hope so.

MAGNETIC HEALERS, ETC.

Magnetic healers are not Christian people, and one of their number says a "healer" can not be a minister of the gospel. Of course, no minister of the gospel would take money from people after he had succeeded in making them *imagine* they were cured when they *imagined* they were sick. It is the old story over again of superstition, and the kind of superstition that gets hold of the most ignorant heathen to be found on the face of the earth. It is going back to the age of incantation and signs; to olden times when doctors performed all their cures by muttering over strange words, and going through with humbug performances. Shall the present age go back again to witchcraft and heathen darkness? Not while your humble servant is, through God's providence, permitted to live and breathe and protest.

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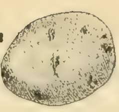

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For Sale! 10,000 Erie blackberry-roots; 8000 blackcap tips, Palmer & Gregg; 30,000 Turner, most profitable red, brings $4.50 to $5.50 per bushel in Akron market; 5000 Cuthbert; 3000 Golden Queen; 40,000 strawberry-plants. No catalog.

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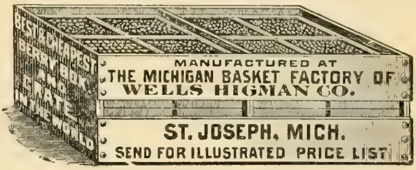

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AMERICAN POUTLRY JOURNAL,
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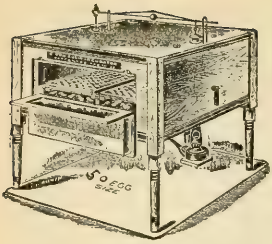

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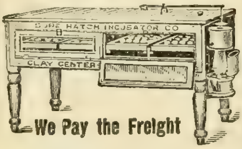

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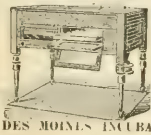

would be an improvement on the old way, but WE can't do it. We CAN furnish an **INCUBATOR that will hatch** all hatchable eggs, and do it with less attention than any machine made. It does it because it is made right and has all late improvements. Sold at a low price and guaranteed. **Catalogue in 5 languages, 6 cts.**

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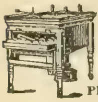

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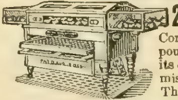

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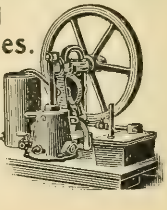

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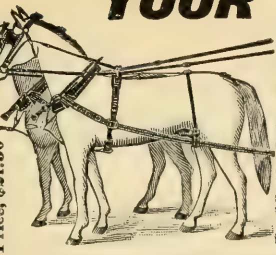

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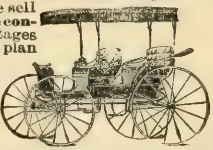

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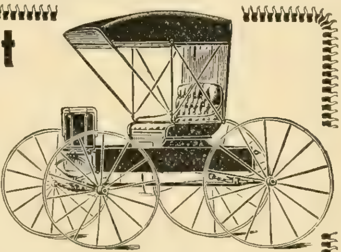
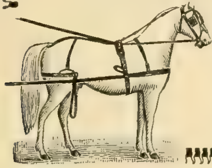


That is a question of greatest importance to the buyer. We believe we are in a position to answer by saying right here at our factory: **Why?** Because we control every element of manufacture as to price, quality, style and finish. We **GUARANTEE EVERY ARTICLE** we sell and ship our goods anywhere subject to examination by the purchaser. If goods are not found as represented and entirely satisfactory, return them and we will refund your money. We really sell you vehicles and harness **at less than wholesale prices** because we save all traveling men's expenses, commission to agents and dealers, loss on bad accounts, etc. Large illustrated catalogue **FREE.**



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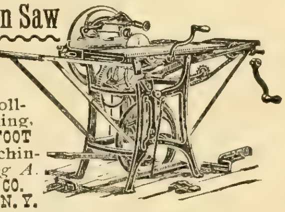

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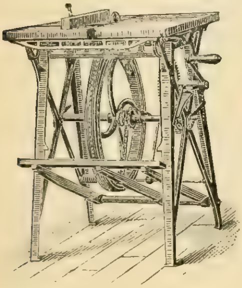

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This cut represents our combined circular saw, which is made for beekeepers' use in the construction of their hives, sections, boxes, etc. *Machines on trial.* Send for illustrated catalogue and prices.

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Established 1885.

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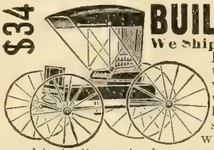

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We Ship Direct to the consumer At **Lowest Wholesale Prices** the most reliable line of vehicles, etc. to be found anywhere. Built substantially of honest material—workmanship the best—one of them will outlast two of the ordinary kind —**Guaranteed** as represented or your money back.

We will ship C.O.D. with privilege of examination. You risk nothing. Reliable Top Buggy, **$34.00;** fine spring Wagon, **$39.00;** strong two horse Farm Wagon, **$44.00;** handsome Surrey, **$54.00;** well made Portland Cutter, **$17.25;** Carts, **$9.50** up. Single harness **$4.50;** Farm harness, **$12.95.** Send for free illustrated catalogue.

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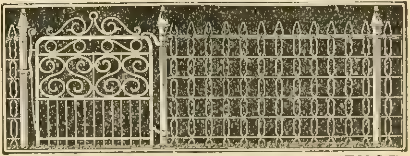

HARTMAN STEEL ROD LAWN FENCE adds to the attractiveness and value of the home. **Strong and durable;** keeps out everything but the sunshine. Unequaled for School Lawns, Church Enclosures, Parks, Cemeteries, Private Lots, etc. Catalogue free.

HARTMAN M'F'G CO., BOX 80 ELLWOOD CITY, PA.
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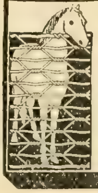


FENCE HONESTY

An honest way to sell anything is to have those who would buy, **TRY IT.** All we ask for the **Duplex Machine** is **A TRIAL.** With it you can make over 100 Styles at the actual cost of the wire. Catalogue and particulars free.

KITSELMAN BROTHERS,
Box 51 Ridgeville, Indiana, U. S. A.

SPECIAL NOTICES BY BUSINESS MANAGER

ORDERS.

We have shipped this year seven more full cars than we had done last year up to the same date, or an increase in carload shipments of over twenty-five per cent. We have not, however, quite so many orders ahead of us unfilled as we had at the same date a year ago. We have enough to keep us busy for the rest of this month, and a little longer. We were never better prepared at this season of the year to take care of orders promptly. After having shipped several million sections we have in stock ready for immediate shipment over three million of the various stock sizes and styles, as well as large quantities of hives, frames, and other goods. We have also a liberal supply of dry lumber and other raw material on hand. We appreciate promptness as much as any one, and it gives us pleasure to be able to serve our patrons promptly with any thing needed in our line.

Special Notices by A. I. Root.

A THREE QUARTER-SPAN GREENHOUSE WITH THE SHORT SIDE FRONTING THE SOUTH.

The new greenhouse I alluded to in our last issue, especially for Grand Rapids lettuce, will be given in our next issue, with illustrations. It was left over in order to have appropriate engravings to go with it.

GREENHOUSE PLANTS, ETC.

I have been making small purchases of plants and flowers from quite a good many different places of late; and while I have had very nice plants, and in excellent order, from almost every florist, I think a little the nicest were from Vaughn, of Chicago. There was a happy surprise when the plants were unpacked, as they were so much larger and finer than I expected. And then there was another happy surprise when I received the invoice, to find the prices were even *less* than I expected. Our azaleas were literally covered with purple buds when they were received, and the buds unfolded and blossomed out without a check as a result of the long shipment. Of course, these plants are shipped in a ball of earth. One of them was put in a pot while in full bloom, and taken to a party, and it just "behaved" beautifully. After I took it out of the greenhouse it was kept permanently in a common dwelling, but it keeps on blossoming and growing just about the same.

SENDING MONEY IN LETTERS

The number of losses that are being reported just now obliges us to request our friends not to risk even a dollar in a letter without registering; or, better still, get a postal note or bank check. A great many seem to think if they put the money in printed envelopes, directed to The A. I. Root Co., they will be sure to go through. But the thieves are going for these particular envelopes, having learned, it would seem, that envelopes with a printed address to our firm are pretty sure to contain money. Please observe the directions for sending money safely, on the back of our order-sheet. If you neglect to do this, and your money is lost, then do not accuse us of either carelessness or dishonesty in the management of our business. We report promptly every case of loss to the Postoffice Department at Washington; but it seems to be a long and expensive job to hunt up the thief and punish him, and I fear a good many never get caught at all.

REDUCTION IN THE PRICE OF HOT-BED SASH.

In the fall supplement to our seed catalog, giving prices of hot-bed sash, I said the price would be $3 00 per box; but I am happy to tell you that since then there has been a decline in glass, and we can now furnish it at the old price of $2.50 per box of 90 lights, 8 x 10. Hot-bed sash in lots of 10, 75 cents each. These are very much better made, with new and improved machinery. With our method of setting glass—that is, butted together and pushed into grooves—the better way by all means is to have your glass shipped in the box and the sash by itself. By this means you save expensive freights, and there is but very little risk of glass being broken. Each sash requires 20 lights; therefore your sash will cost you, glass and all, without paint, about $1 25 each.

THE GARDEN-SEED BUSINESS, FEB. 15.

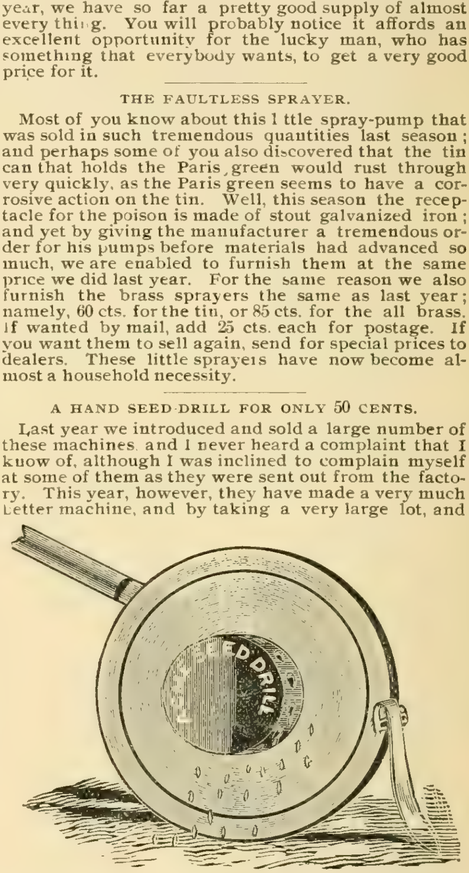
There is a tremendous activity just now in staple garden seeds; and one reason for it is, so many things are "sold out." In our wholesale trade lists we find an unusual number of the most important staple seeds marked "sold out." And the worst of it is, there is not any more to be had anywhere. Just after we had got the Gigantic Gibraltar onion in our list in our last issue, we found the introducer had not even an ounce of the seed left. At the present writing we have a very few five-cent packets, and I do not suppose they will last till this reaches you. Most of our seeds are bought in the fall, as soon as the new crop is harvested; and as we keep a careful record of the amount sold each year, we have so far a pretty good supply of almost every thing. You will probably notice it affords an excellent opportunity for the lucky man, who has something that everybody wants, to get a very good price for it.

THE FAULTLESS SPRAYER.

Most of you know about this little spray-pump that was sold in such tremendous quantities last season; and perhaps some of you also discovered that the tin can that holds the Paris green would rust through very quickly, as the Paris green seems to have a corrosive action on the tin. Well, this season the receptacle for the poison is made of stout galvanized iron; and yet by giving the manufacturer a tremendous order for his pumps before materials had advanced so much, we are enabled to furnish them at the same price we did last year. For the same reason we also furnish the brass sprayers the same as last year; namely, 60 cts. for the tin, or 85 cts. for the all brass. If wanted by mail, add 25 cts. each for postage. If you want them to sell again, send for special prices to dealers. These little sprayers have now become almost a household necessity.

A HAND SEED-DRILL FOR ONLY 50 CENTS.

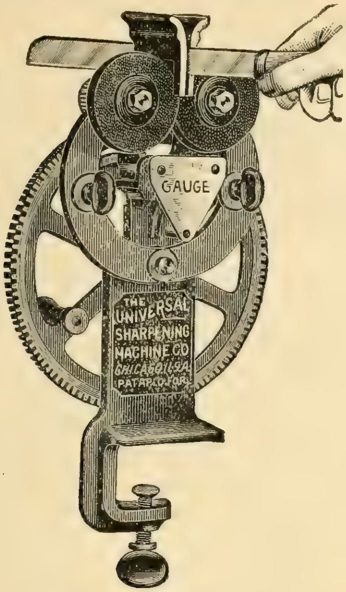
Last year we introduced and sold a large number of these machines, and I never heard a complaint that I know of, although I was inclined to complain myself at some of them as they were sent out from the factory. This year, however, they have made a very much better machine, and by taking a very large lot, and having them made up during the dull season, we have been enabled to furnish not only an improved machine, but at a lower price than we did last season. These drills are not only just what you want in making garden, but they are just the thing to put in the seeds quickly, and accurately spaced, in hot-beds, cold-frames, etc. If wanted by mail, add 20 cts. each for postage.



A SHARP KNIFE.

Some years ago I became so disgusted with some of the boys around me who never had a knife at all, or if they did have one it was so dull it would not cut a string without an awful sight of strength, that I said something like this: "The boy with a knife in his pocket is worth a cent an hour more than one who never has a knife; and the boy who always has a knife that is nice and sharp is worth *two* cents an hour more." It is not alone on account of the convenience of the knife; but the boy who is so thrifty and careful as to keep his knife sharp is more valuable in other respects than a boy with a dull knife or none at all.

Well, a few days ago I was reminded of this speech by looking at the little machine pictured below.


GAUGE
THE UNIVERSAL SHARPENING MACHINE CO CHICAGO U.S.A. PAT. APPLD FOR.

THE UNIVERSAL SHARPENING-MACHINE.

A student from Oberlin College had it in charge, and he sharpened our knives all around, then told us to get a pine stick and "whittle." Now, the knife not only whittled beautifully, but it kept its edge much better than a knife sharpened on a grindstone or whetstone. The reason of this is, that the little carborundum wheels grind both sides of the knife at once, and leave them in the shape that is called "hollow ground." After I got a machine of my own I discovered one would have to learn the trade to use it; and then to make it cut as well as the agent did, you must put on your specs and hold your knife up before the light, and keep grinding until you get all the nicks and dull portions ground out. It does not take very long when you get the hang of it; but when it is done right, your knife will cut paper or any thing else, just like a razor. The chap who had the machine said it would not grind shears; but I gathered up all the old shears in the house, and some that never had cut, and "never would cut," so Mrs. Root said, and I made them cut most beautifully; but I had to grind one blade on one wheel at a time. Yes, and I took a butcher-knife that Mrs. Root said never was "any good," and by working it down into proper shape I made that too just cut beautifully. Any one can use the machine if he will follow the directions or after he has been shown until he knows how. The price is $2.50, packed in a neat little box with a book of directions. We have made arrangements so we can furnish the machines, including GLEANINGS for one year, for $2.25. If you have paid for GLEANINGS one year already, you may have a machine for $2.00.

THE LAST AND FINAL REPORT OF THE LITTLE GOLDEN-LEAVED SALVIA IN ITS THUMB POT.

Well, I actually kept it in that pot until it sent out a great number of blooms. Notwithstanding its lilliputian size and its small amount of jadoo, it sends out one of those long scarlet tongues in just two or three hours, and some of them measure an inch and a quarter in length. They usually drop off after about 24 hours. But now here is one more astonishing thing: The salvia is one of the mint family, as you know, and it is a honey-bearing plant. Well, these long tubes, after they drop off, contain quite a drop of honey. How can this little plant do such stupendous work, and secrete a lot of nectar in the little blossoms besides? Well, it could not do it, probably, if I had not fed it with jadoo liquid.

Perhaps you think I am making a lot of fuss and telling a long story just about a little plant; but look here, friends: In studying this matter of plant roots I have found out that I can tell almost within 24 hours what liquid fertilizer (or, if you choose, chemical manure) is appropriated by and is of value to the plant. I read somewhere that soot was a valuable fertilizer. Well, in cleaning out a chimney we got two or three pailfuls. This chimney belongs to the cooking stove, and nothing has ever been burned in it but hard wood—mostly beech and maple. Well, I sifted out the finer portions of the soot and mixed it with jadoo and sand—say a pint of soot to a bushel of the potting soil. Then I used the coarser particles of soot for the drainage in the bottom of the pots. It has a strong smell of creosote, and I was afraid it might be injurious; but the geraniums and other plants sent their little white roots down all through the cinders of soot, and said to me in plain English (?) that that stuff was just what they liked. Now, aside from proving itself a valuable fertilizer, its strong odor is very efficacious in keeping away worms and insects that infest our plant-beds. If you will make a study of growing plants in pots as I have been doing, you can test all the chemicals and other kinds of fertilizers that are offered for sale in the market; and you can do it in just a few hours. The little salvia has now been shifted to a larger-sized pot, as it has finished its task. Mrs. Root suggested that it seemed almost like "cruelty to animals" to make it do so much work with so little room for its roots and rootlets.

THE COFFEE-BERRY AS A FOOD BEAN, AND ALSO ITS HEALTHFUL PROPERTIES.

A few years ago we sent to you for a small package of coffee-bean, about half a teacupful. We planted it out in the field. It grew finely, but the rabbits kept it eaten off. Only two plants that were hidden in high weeds grew, and yielded about ⅔ of a teacupful, which we planted next year near the house. They yielded 80 lbs. We like it very much as a substitute for coffee, if not browned too much. We generally put in ⅓ or ¼ of sale coffee with it; but cooked as beans we feel they are a real God-send. We like them very much; we like the taste of them, and then they are so beneficial to our health. They seem to be nutritious and very laxative. Until using them Mr. A. had to use cathartics nearly every day; now, scarcely any.

Roseville, Ill., Jan. 19. MRS. L. C. AXTELL.

[We are very glad to get the above report from so good an authority as our old friend Mrs Axtell. Several have before suggested that the coffee berry was a very nutritious food bean; but no one has told us before that it is a good substitute for physic. By all means let us use the various foods that God has provided in such variety, in place of drugs which so often do harm.]

KIND WORDS FROM OUR CUSTOMERS.

This is the second year I have taken GLEANINGS; and allow me to say I think it better this year than last. W. T. SHERMAN.

Millard, Wis., Dec. 4, 1899.

I notice what A. I. R. has to say in Nov. 15th GLEANINGS about robbing bee-keepers. I desire to say that the queen-breeder in question does feel grateful, not on account of the few dollars involved, but it does me good to see the way GLEANINGS handles rogues.

Parkertown, O., Dec. 4, 1998. H. G. QUIRIN.

As regards GLEANINGS and also your new edition of the A B C, I can only say that they are excellent, and better than ever before; and as you already know this well enough, it will be unnecessary for me to say more about it. LOUIS SCHOLL.

Hunter, Texas, Dec. 27, 1899.

GLEANINGS AS AN ADVERTISING MEDIUM.

My first customer was from my adv't in GLEANINGS, who still orders every season; and I have never lost a cent through a customer secured through GLEANINGS. It is a good journal to have about the house, also to advertise in. H. H. AULTFATHER.

Minerva, Ohio, Jan. 10.

[Well, friend A., the above seems to be complimentary all around; and I should not wonder if it is indeed true that the people who care for GLEANINGS, and pay for it and read it, are, as a rule, those who pay as they go. Of course, there are quite a few who object to the stand we take on temperance and other moral issues; but this class is not composed of those who keep square with the world, as a rule.]

Mr. Root:—I wish to congratulate you on GLEANINGS for 1899. I have bound it; and, though I have six volumes of GLEANINGS without a missing number or leaf, the 1899 volume is so far superior in all its departments that it clearly demonstrates the forward and upward movement of the paper. You speak of using wire nails for binders. A little crude, isn't it? I use a small shoe or belt punch; make two holes ½ inch apart near the back at each end, and pass a flat shoestring through, and tie; and when the volume is complete I make fast and cut the end of the strings off. This gives a very nice spring back, and doesn't scratch furniture. W. B. RANSON.

New River Depot, Va., Dec. 26.

My Dear Friends:—I arrived safely about 20 minutes ago, and was warmly welcomed by my new friend. He fed me immediately, and, after talking to me and petting me awhile, placed me right end up in his vest-pocket that seemed to have been made for the express purpose of giving me a snug warm place. He is older than I thought; but I guess he's all right, for he talks nicely and smiles whenever he looks at me. He says I'm a dandy. Thank you for giving me so kind a friend. I wish I could tell you about all I saw and heard on my journey, but that would make this letter too long; but you ought to have seen the strange company I came with. I think Uncle Sam—that's what I heard them call somebody who they said was our guide on our journey—must be doing a queer kind [illegible] business. His boys, as they called them, eyed me very closely, and once or twice, from their actions and talk, I felt a little scared; but may be I misjudge them. I will write you occasionally if all goes well.

"Dictated." T. P. S. F. C. F. P.

(The Post self-filling and cleaning fountain pen).

THE WAR IN SOUTH AFRICA

has demonstrated the great foresight of the Boers, in availing themselves of all the opportunities in times of peace to prepare for war. Similar foresight should lead you to improve the opportunity of securing better farms than theirs in this country. They are on line of the Chicago, Milwaukee & St. Paul railway in Marinette County, Wisconsin, where the crops are of the best, work plentiful, fine markets, excellent climate, pure soft water; land sold cheap and on long time. Why rent a farm when you can buy one for less than you pay for rent? Address C. E. ROLLINS, Land Agent, 161 La Salle St., Chicago, Ill.

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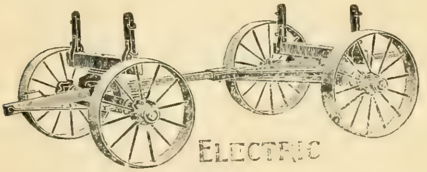

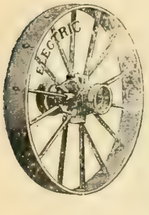

This wagon is composed of the best material throughout—white hickory axles, steel wheels, steel hounds, etc. Guaranteed to carry 4000 lbs. These Electric Steel Wheels are made to fit any wagon, and make practically a new wagon out of the old one. They can be had in any height desired, and any width of tire up to 8 inches. With an extra set of these wheels a farmer can interchange them with his regular wheels and have a high or low down wagon at will. Write for catalog of the full "Electric Line" to Electric Wheel Co., Box 95, Quincy, Ill.

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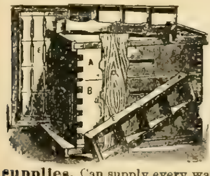

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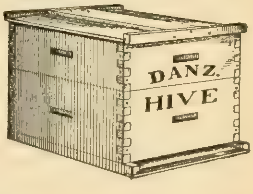

FOR SALE.—Thirty stands of fine Italian bees in 8-frame (Hoffman) hives, chuck full of honey. Will sell in part or all. Address

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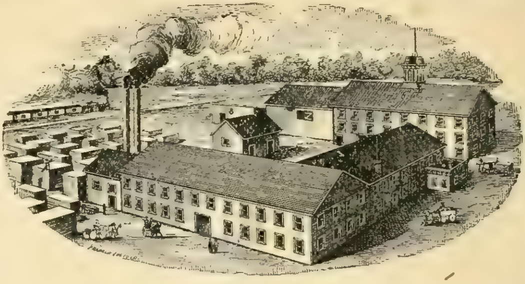

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Doctor	3½-in.	"	"	9.00;	"	1.10
Conqueror	3-in.	"	"	6.50;	"	1.00
Large	2½-in.	"	"	5.00;	"	.90
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Little Wonder (wt. 10 oz.)	2-in.	"	"	4.50;	"	.60
Honey-knife			"	6.00;	"	.80

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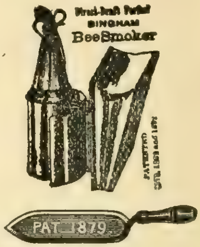
January 27, 1897. Truly, W. H. EAGERTY, Cuba, Kansas.



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T. F. BINGHAM, Farwell, Michigan.

$1900, A.D. 1900,

will not buy my 500 colonies of bees, but am ready to furnish good Italian queens

BY RETURN MAIL.

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1 Tested Queen, $1.50; 6 for $8.50; 12 for $15.
1 Best Breeder, $4.00.
Nuclei, $1 to $10 in season.

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Bees, Honey, and Beeswax bought and sold.

Watch My BARGAIN COUNTER in April.

Coin, double or single standard, Uncle Sam's Postoffice money-orders, bank draft, or registered letter, will get you prompt service.

W. O. VICTOR,
WHARTON, Wharton Co., Tex.

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W. W. Cary,
Lyonsville, Mass.

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Honey Column.

CITY MARKETS.

PHILADELPHIA.—Quantities of extracted honey held back are now arriving, and prices are a little lower; also job lots of comb honey. No fancy in market. We quote No. 1 comb, 12@13; extracted white, 8; amber, 6@7. We are producers of honey—do not handle on commission. WM. A. SELSER,
Feb. 20. 10 Vine St., Philadelphia, Pa.

DETROIT.—Fancy white comb honey, 15@16; No. 1 do., 13@14; amber do., 11@12; dark and undesirable lots, 8@10. White honey (comb) is scarce, but demand is light. Extracted, white, 7@7½; amber and dark, 5@6. Beeswax, 25@26. M. H. HUNT & SON,
Feb. 21 Bell Branch, Mich.

KANSAS CITY.—We quote fancy white comb, 14@15; No. 1 do., 13½@14; No. 2 do, 13@13½; No 1 amber do, 13@14; extracted, white, 7½@8; amber, 7@7½. Beeswax, 22@25. C. C. CLEMONS & Co.,
Feb. 19. Kansas City, Mo.

ALBANY.—No material change to note in the home market, excepting extracted, which has a good demand now, especially buckwheat, for the Jewish holidays. Beeswax, 26@27.
McDOUGAL & Co.,
Successors to Chas. McCulloch & Co.,
Feb. 21. Albany, N. Y.

BOSTON.—Our market on comb honey continues very dull; and while the supplies are not large, yet they are fully equal to the demand. Our nominal market is 18; but these prices can be shaded where an actual purchaser is found. We think the lack of demand is caused largely by the difference between price of this year and previous years. Extracted honey sells in better demand at 7½@7¾.
BLAKE, SCOTT & LEE.
Feb. 19. 33 Commercial St., Boston, Mass.

NEW YORK.—Demand for comb honey continues dull and featureless, with supply small, especially clover honey. Prices without material change. Fancy clover, 1-℔. section, 15@16; A No. 1 white, 1-℔. section, 14@15; No. 1 white, 1-℔. section, 12@13; No. 2 white, 1-℔ section, 10@11. Extracted white, 8@8½; do. light amber, 7½@8; amber buckwheat, 6½@7; fancy buckwheat, 1-℔. section 10@11; No. 1 buckwheat, 1-℔. section, 9@10; No. 2 do., 8@9 Beeswax, fancy, 27@29.
CHAS. ISRAEL & BRO.,
Feb. 20. Cor. Canal and Watts Sts., New York.

BUFFALO.—The honey market is fully as good as it has been. The demand is very good at prices quoted. Fancy, 15@16; A No. 1, 14@15; No. 1, 13@14; No. 2, 11@12; No. 3. 10@11; fancy dark, 10@11; good dark, 9@10. Extracted white, 8@8½; do. dark, 7@7½. Beeswax, 29@30; scarce and wanted. W. C. TOWNSEND.
Feb. 22. Buffalo, N. Y

CHICAGO.—A little trade in honey in a peddling way by the case; no demand for lots; neither has there been for the past three months. Comb honey of choice grade is selling at steady prices, and there is no too much of it; but off grades are slow. Extracted is steady, with no change in prices. Beeswax sells at 28, if yellow and clean. R. A. BURNETT & Co.,
Feb. 19. 163 S. Water St., Chicago, Ill.

FOR SALE.—Light amber honey, good body and flavor, at 8 cts. per ℔, in 60-℔. tin cans.
C. J. BALDRIDGE, Kendaia, Seneca Co., N. Y.

WANTED.—Comb and extracted honey. State price, kind, and quantity. R. A. BURNETT & Co.,
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Orders booked now for delivery in season. Price $1 00 for warranted queens untested.

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If you are looking for the bee that will gather the most honey, and the gentlest of all bees in handling, buy the Albino. I also furnish the Italian, but orders stand 50 to 1 in favor of the Albino. I manufacture and furnish supplies. Address
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The standard blackberry for hardiness and productiveness. Plants from young and healthy plantations. Price $7.00 per 1000; $1.00 per 100; dozen, by mail, 25 cts.

CHAS. L. TODD, Hartwick Seminary, N. Y.

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Italian bees, $4.00 per colony. . . .

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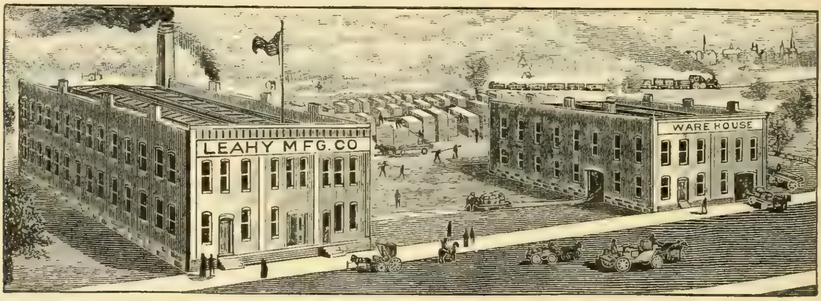

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GLEANINGS IN BEE CULTURE

A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS.

ILLUSTRATED SEMI-MONTHLY

Published by THE A. I. ROOT CO.
$1.00 PER YEAR MEDINA, OHIO.

VOL. XXVIII. MAR. 1, 1900. NO. 5.

STRAY STRAWS FROM DR C. C. MILLER

THREE QUEENS were given to a queenless colony in the expectation that two of them would be killed. All three remained peaceably together. *Leipz. Bztg.*

"THE AMOUNT of comb occupied with brood just before the flow commences is the right number of frames to have in the brood-chamber during that flow," p. 136. Well said, Bro. Doolittle.

F. T. HOOPES, p. 138, speaks of having to use both hands for a Clark smoker. How is his Clark made? All I ever saw are easily used with one hand. [I would as soon use two hands to try to write with a pen.—ED.]

IF I HAD that candied comb honey W. E. Head speaks of, p. 139, I'd melt it *very slowly*, take off the cake of wax, and eat the honey. [The solar extractor that I recommended does that very thing. It melts very slowly, and takes a long while to bring about a separation.—ED.]

DZIERZON, the grand old man to whom we owe so much, seems to possess still the vigor of youth. His name is generally pronounced *Tseertsone*, in accordance with German pronunciation. But Dzierzon himself says the name is of Polish origin. As nearly as it may be given in English, he pronounces it *Cheerzone*.

A RECENT STRAW says *Die Noerdlinger Bienenzeitung* championed the Dickel theory, and then died. That does not prove the Dickel theory false, for if it did the Dzierzon theory would be proven false in the same way. Nearly half a century ago the same paper championed the Dzierzon theory and suffered in consequence.

MR. EDITOR, you say you'd like a smoker to send a continuous stream of smoke. Go to Germany and you'll find one acting automatically. [Are you joking about two-legged smokers, or do you mean some sort of automatic affair of springs, leather, cogwheels, tin, bolts, screws, etc.? If you don't, then you should have labeled this a joke.—ED.]

NOW YOU *have* done it—letting Stenog say what he did, p. 119, about Dickel theory. Perhaps you'd better offer Greiner a column to defend the theory, and say *that* ends the discussion. [The European papers seem to regard the Dickel theory as now devoid of interest, and hence we may conclude, I think, it has run its course.—ST.]

I LEARN that some think I am unfair to the Dickel theory. I much regret that any word of mine against it has found its way into print. I do not believe American bee-journals ought to take up room discussing it while it is being so fully discussed by German bee-keepers who lead the world in careful investigation. We can afford to wait till they settle it, as no change in bee management will come from its acceptance or rejection.

SPEAKING of cellar bottoms, I suspect you're right, Mr. Editor, in saying that much depends on the soil. Adam Grimm showed me a cellar with cement bottom made especially for bees. Next time I was there he said the cement was a mistake. A room in my cellar with cement floor was meant for bees. I used it one winter, but since then have used a room with clay bottom. And yet I don't understand why cement isn't all right.

J. M. RANKIN is reported in *American Bee Journal* as saying that five colonies were affected with foul brood from a diseased colony piled up with them in the cellar. [This seems very probable. Foul brood is communicated very commonly by bees in the apiary intermingling from one hive to another. When the hives are closely piled in the cellar, the inmates are almost sure to work from one entrance to another, to a limited extent.—ED.]

I MAY SAY to friend Coppin, p. 137, I have the same arrangement he has, only I don't keep vegetables in the room with my bees, and years ago used his plan by opening the door from dining-room to cellar. Having tried both plans, I much prefer the fire in cellar. Has he tried both plans, or is he only theorizing? Up to this date, Feb. 19, there has been no fire, 40° having been the lowest notch; and I don't expect to start a fire unless there comes a time when temperature is about 50° inside and out, and then a fire may be made to start circulation.

TAKING ADVANTAGE of my youth and inexperience, Mr. Editor, you always try to shut me up when I say any thing about long tongues. Now here's my chance again. If Prof. Koons found (p. 132) that No. 6 had a tongue just one-sixth longer than No. 12, don't you believe that, by always measuring and breeding from the longest tongued colonies, the length of tongue might be materially increased? Yes, I know I've already said a good deal about it, but then you know I have a pretty long tongue myself.

H. GUEHLER, the German honey-dealer, perhaps leads the world in his line. He has 1600 places of sale in Berlin and other places. In Gravenhorst's *Bztg.* he says that, because much American honey is atrocious in character on account of lack of intelligence and cleanliness in handling, it is generally considered adulterated. But after very many analyses he asserts it is just as pure as German honey. Of all the lots he has examined, only three have been adulterated—one German, one Hungarian, and one American.

REPLYING to Mr. Gibbs, p. 139, a frame 8 in. long and 12 deep would not be better than the other way, because it would give too small surface for supers, and would take 50 per cent more time and 100 per cent more trouble to lift out the combs. [A shallow frame has the advantage of convenience in handling as well as giving a large super area; but theoretically it is not as good for wintering bees as the deep or square frame; but practically, in the hands of a good bee-keeper, bees seem to winter as well on one frame as the other.—ED.]

"IF THEY [bees] are given larvæ all of one age, and that a suitable age, *all* of the queens will be good queens. If there is any one thing about queen-rearing that I *know*, this is one of them."—Editor Hutchinson. Let me put, alongside of that, one of the things I *know* that I know. I *have* given to queenless bees larvæ all of one age, and that a suitable age, under circumstances favorable for rearing good queens, and some of the queens were good and some were very poor. [When doctors disagree, who shall decide?—ED.]

A RED-PEPPER pod placed on the coals in a smoker is recommended in *Deutsche Imker aus Boehmen* to quiet bees. [To my notion it would be too much of a good thing. A reasonable amount of smoke will drive bees, and why should we make the smoke so pungent as to be positive cruelty to animals? The moderate use of a whip for a horse is not punishment, but to assist in driving. The moderate use of smoke is not to cause the bees blinding pain, but to gently induce them to get out of the way, or to quiet them if they show fight. —ED.]

I STAND with Greiner, p. 131, in not seeing any noticeable let-up in the breeding of bee-moths throughout the season. From the time warm weather comes till autumn frosts, I don't believe there's a time when you will be safe from moths if you expose a set of brood-combs without bees. Catch a female moth any day in the summer, pull off her head, and in a minute she'll begin to feel around with her ovipositor; and if you let it reach the crack between your thumb and finger she'll lay eggs. Possibly, however, each single moth has its two broods.

"YOU WILL REMEMBER that he insisted that a worker-bee should be designated by the feminine pronoun," quoth ye editor, p. 117, rereferring to this veracious correspondent. Steady, Mr. Editor; did I ever object to calling it "it"? I only insisted, insist now, and expect always to insist, that if sex is intimated it must be "she" and not "he." I revolt against the absurdity of saying of a laying worker, "*He* laid eggs." [Perhaps you never objected to calling it *it;* but it was your recommendation and practice to refer to the worker bee as *she;* but what pleases me is to see you *now* fall into line and designate her as *it.*—ED.]

W. H. PRIDGEN says in *Amer. Bee keeper* that those who condemn breeding for color "are guilty of the same to the extent of keeping up their chosen standard." Seems truth in that. Fact is, color is about the only outside tag we can have to stand for good qualities within, so it's right to breed *to* color; but breeding *for* a different color without regard to other characteristics is quite another thing. [So far as I know, no one has condemned breeding for color, providing other good qualities were not lost sight of; but a cry has been raised against making color the *only desideratum*—something that has been done too often. —ED.]

NOW THAT immediate danger of violence to English spelling in GLEANINGS is no more, and that Mr. Wanser, who wants spelling progress to "emanate from our public schools and colleges," may not be too severe if he should happen to see "honor" for "honour," or "clipt" for "clipped," it may be well to say that the changes he opposes with so much earnestness have not emanated from a few cranky ignoramuses, but *have* emanated from colleges. The changes were recommended by some of the most eminent scholars of America and England, among them professors in Yale, Harvard, University of Pennsylvania, St. Johns, Columbia, etc., in this country, and in England in Oxford and Cambridge.

COLORADO BEE KEEPERS seem down on short top-bars with end-spacing—say they drop down. I've just been out to measure. When one end remains stationary the other end must be shoved to one side 3¼ inches before it drops. Possibly there is a little difference, due to my top-bars being 1⅛ wide at end. I wouldn't go back to long top-bars for a good deal. [I found the trouble with short top-bars in Colorado was due to the fact that there were two makes of hives in use, both Langstroth, but one make ¼ inch longer than the other. This, of course, caused trouble. It is unfortunate that standard Langstroth measurements are not adopted by all manufacturers. But however this may be, a *principle* right in itself should not be condemned when obviously the trouble is somewhere else. —ED.]

USING language correctly is a hard job for me. In a late Straw I said, "Some foundation made of pure wax ten years old was very brittle." The editor (quite excusably) understood the foundation was made ten years ago. Let me try again: "Some wax ten years old was made into foundation, and the foundation was brittle when first made." According to the editor this could not be; and it is quite possible that some one in Germany has my trouble about using language. [I can not understand why wax ten years old should give a hard brittle foundation unless the wax during melting was heated too hot or the sheets of wax immediately after dipping were chilled too soon. Of course, by the new process there is no chilling of the wax; and this, together with the fact that the product is subjected to about 500 lbs. pressure to the square inch, makes a homogeneous, tough, yet pliable product.—ED.]

PICKINGS FROM OUR NEIGHBORS' FIELDS. By "STENOG."

Winter still maintains his reign—
Ice and sleet and snow again;
Bees are fastened in their hives,
Waiting there till spring revives.

AMERICAN BEE JOURNAL.

The issue for Feb. 22 starts out with a biography of D. H Coggshall, of West Groton, N. Y. A view of Mr. C.'s residence and one of his apiary are given—the same that appeared in this journal on pages 892, 893 last year. As Mr. Coggshall is so well known to our readers through these columns, there remains nothing more to be said except that he, like his brother W Lamar, is a good example of what can be done in one line by being always at it.

* * *

In regard to extracting too closely, "Old Grimes" says:

> In order to get the most out of an extractor some bee-keepers extract quite an amount of larvæ with the honey, but here is a case where the operator would better be content with a little less. Old Grimes learned a lesson many years ago that cured him of this trick. There was quite an amount of said larvæ in all stages of development in the strainer, and we all know that they never look very nice, and we prefer that our customers should not see them; but there came a city lady who was being shown the mysteries of the bee-business; everything was new and very interesting to her until she came to the strainer with the white larvæ in it, and the honey running over them. Then and there, from the remark she made, she forgot all the rest she had seen, and only remembered "those worms," as she termed them, and thereafter she never would allow a drop of liquid honey to pass her lips—she knew just how it was extracted. Although but a very little of our honey had been in contact with the larvæ, it made no difference, it was all alike to her.
>
> If much larvæ is thrown out with the honey it will injure the flavor. A good way to overcome the larvæ trouble is to return to the hive all combs having unsealed brood. It may be a little trouble and a delay in the extracting of that comb, but it pays. Another way out of the woods is to use the queen excluding honey-board; all honey stored above it is sure to be free from larvæ, and for that reason it is used quite extensively in our apiaries.

This whole article on extracting ought to be in pamphlet form, and read by all who own an extractor.

Mr. York deserves great praise for the excellence of the mechanical part of his journal. Its freedom from typographical mistakes is quite in keeping with the high moral tone of the journal.

BRITISH BEE JOURNAL.

Mr. A. H. Cowan, son of Thos. W. Cowan, was married in Loomis, Cal., Jan. 9, to Miss Mary Owen. Mr. Cowan is engaged in raising oranges and peaches on a large scale in California.

* * *

In speaking of some people who should not keep bees, the editor says:

> Then there is a class of unpromising candidates for success in the pursuit who possess no natural aptitude at all for it and who should never attempt to engage in it. One of these well accounted for his failure when he remarked to us: "My bees were awfully savage the other day; but Jack was as good as his master, and I gave it them *hot!*" And very hot indeed had he given it them, for on lifting the quilts the number of dead bees we saw lying with their crushed bodies flattened on the top bars fully attested the warmth of his "handling."

Here is another good point:

> It is just as necessary that the bee-keeper should know when to leave the bees alone as it is to do the right thing at the right time; and he who persists in carrying through operations at the wrong time, and while the bees determinedly resent it, not only acts unwisely, but lays the foundation of further trouble. Gentle handling at all times, and judicious waiting for another chance to carry out operations if the bees are disposed to be vicious, will have a remarkable effect in preserving the bee master's control of the apiary, and in maintaining that order therein which is so necessary for comfort and success.

* * *

Rev. George Raynor for more than twenty years dispensed with smoke and smoker, using instead a solution as follows: 1½ oz Calvert's No. 5 carbolic acid; 1½ oz. glycerine, 1 quart of warm water. The acid and glycerine are to be well mixed before adding the water, and the bottle to be well shaken before using. But the editor says he prefers a good smoker and a bit of dry fustian.

* * *

A correspondent at Durban, Natal, South Africa, near the seat of war, says:

> There is a formidable black ant, about the size of the common house-fly, that comes in an army, and then a battle royal takes place, the slaughter on both sides being tremendous, and the fight lasting for a day or two; but the ants have a great advantage at night, and eventually win and carry off honey, brood, and bees, entirely destroying the stock.

* * *

An English weather report for January is not without interest. Rainfall, 3.77 inches. On the 6th, almost one inch fell. It rained 21 days. Lowest temperature, 23, on the 6th; highest, 50 on the 24th. Frosty nights, 17. Sunshine, 53.7 hours. Sunless days, 11.

* * *

The solar wax extractor does good work in South Africa these winter months, the maximum temperature being 120 degrees.

Probably quite a number will agree with what the editor says in regard to stings, as follows:

> We can not entirely agree with the oft-repeated assertion that "bees will never volunteer an attack," nor sting "except in self-defense." Neither is it quite correct to say that "after a little practice and experience no protection is required;" indeed, it will usually be found that in apiaries of any extent, where the bees are "natives," and possessing the grit and the healthy vigor requisite to make good returns possible, there is not that complete immunity from the risk of an occasional sting which some would have us believe. As a matter of fact, in all our acquaintance with successful bee-men we never yet found one who hadn't a veil somewhere in the house, and who did not wear it at one time or another. Personally, we almost invariably have our veil on when working among bees, not pulled down over the face, but ready on the hat for instant use on an emergency. It lessens the risk to have it so, and a sting in the eye is at no time agreeable.

REVUE INTERNATIONALE.

In speaking of the death of the oldest bee-journal in the world, *Nordlinger Bienenzeitung*, the advocate of the Dickel theory, and edited by Mr. Dickel himself, Mr. U. Gubler, an eminent French writer, says: "This was the journal that was rendered famous by the publication of the Dzierzon theory; and it is a curious thing that the denial of this same theory is what has cost its life."

This journal is also printing a very interesting series of articles on the anatomy of the bee. The present article is a complete exposition of the Dzierzon theory, written by Thos. W. Cowan in English.

* * *

Mr. E. Bertrand, editor, gives over two pages in his January issue to a description of the A B C book and the Home of the Honey-bees. As it is a translation of what appeared in our Nov. 15 issue we will not reproduce it here. But in winding up, Mr. Bertrand says: "We have tried, in the preceding, to give an idea of the importance of the Medina establishment, which is, undoubtedly, in its particular line, the largest in the world. It remains for us to congratulate the members of the firm for the notable part they have taken in the development of apiculture, and especially for the services they render by their beautiful and useful publications."

GENERAL CORRESPONDENCE

GREASY SECTIONS.

Not Caused by the Queen or her Bees, but by a Poor or Slackening Honey-flow.

BY DR. D. A. M'LEAN.

An article in the Dec. 15th issue of GLEANINGS, entitled "Greasy Sections," tallies so closely with well-established convictions that I have held for several years, that I wish to lend my assistance to the writer in his laudable endeavor to "sit on" Dr. Miller and other writers who have been advising the killing of the queens of those colonies that give that kind of honey. Had I followed their advice I should before this have killed off, at various times, all the queens in my apiary at least once, and some of them probably several times.

From a careful observation for a number of years I have determined, to my own satisfaction at least, the cause of the honey presenting the watery or greasy appearance. I believe the writer of the article spoken of has mistaken an indirect or remote cause for the immediate one. The immediate cause (in my opinion) is a *sudden partial failure of the honey-flow.*

Let there be a free honey-flow with good weather, either hot or cool, the bees all busy, and honey coming in fast, no sections with the thin greasy-looking cappings will ever be found, but all will be nice and white, because plenty of wax is secreted and used. But let a spell of very hot dry weather begin and continue for some time, or equally effective, as I have many times observed, showery weather for a week or ten days, and you may look with confidence for the "greasy" cappings. The effect of continued hot dry weather and of showery weather on the honey supply is the same; viz., to reduce the amount. Now, your honey-bee is an extremely provident and conservative worker. When honey is coming in freely it uses it freely to make wax for the cappings; but as soon as the supply begins to diminish, it begins to use less for wax, and uses only sufficient to hold the honey safely in the cells; and the thin cappings, resting down on the honey, absorb some of it, expel any air that may have been inclosed, and look watersoaked or greasy. I have watched this effect so many times that I can tell almost to a certainty from the character of the season and the honey-flow where and how much of the thin cappings I shall find in a super before taking it off. For instance, if my super was, say, half filled, and capped during the free flow, and the other half during a scanty flow, I shall find the center sections nice and white, because they are usually capped first, while those on the outside will be more or less lacking in amount of wax over the cells; while, on the other hand, if the super has been placed on the hive a short time before the shortage begins, the middle sections will be "greasy;" and if a good flow comes afterward, the outside ones will be nice and white. There will, of course, be all kinds of variations in this matter according to the stage of completion of each particular super; but my proposition is that the honey that is capped during a scanty flow will, much of it, be "greasy."

The editor says he does not remember seeing watery and white honey come from the same hive. I wish to say that I take it from the same hive and from the same super every season, and I feel confident that, if I did not see the inside of a single one of the supers until the close of the season, I could guess very closely the amount of greasy sections I should have from the character of the flow throughout the season.

You will notice Mr. Whitney says in his article that the first and third cases of sections were stored during a *rapid flow*, and while the weather was cool, and that they were *white;* while the second one that was stored in extremely hot dry weather was "greasy;" and although he says there was a fairly good flow from sweet clover it was probably much less than during the cooler weather.

I can not believe the hot dry weather to be more than the indirect cause by lessening the honey-flow, because I have so many times seen the same result from wet weather. I live within five miles of the foot of the Rocky Mountain range, and our showery season begins about the first of July. The forenoon will be warm and bright, and the nectar plentiful in the alfalfa bloom; but by one or two o'clock a dashing thunder-shower is in progress, pretty thoroughly washing the nectar from the flowers, and this will recur day after day, sometimes for ten days or two weeks, thus giving the bees but two or three hours per day for honey-gathering, as it takes a goodly share of the interval between showers to recover from the washing, and begin to secrete nectar. These conditions prevailed during the last season, and the character of the cappings of the honey told with perfect accuracy where the restricted honey-flow began and where it ended.

Some four years ago the opposite condition prevailed. After about ten days' fine flow the weather became very hot and dry, and remained so for some time. The honey-flow grew less and less, until storing above finally ceased. The result was, a considerable share of my honey was "greasy."

From these observations I am led to believe that the hot dry weather acts as a cause in the same way that the wet weather does, by restricting the amount of honey gathered.

I thoroughly agree with Mr. Whitney in saying that the honey with the thin cappings is the choicest honey in the hive; and it is so because it is gathered slowly, and is thoroughly ripened before being capped.

Fort Collins, Colo., Dec. 22,

[On my recent trip to Colorado I called at the doctor's office, but he was not in. As my train was to come soon I did not have the opportunity of seeing him personally; but well do I remember those towering Rockies that he speaks of on the very border as it seemed to me of the town.

While the doctor seems to give convincing proof to the effect that the condition of the honey-flow — that is, the weather and the amount of nectar in the fields does have a direct influence upon color of the cappings—yet here is something from another Coloradoan, Mrs. Barber, one of the most prominent and successful bee-keepers of the State. Her evidence seems to be equally conclusive that the trouble lies largely with the queen. While it is possible that both conditions of weather and the stock (the queen) may have something to do with greasy cappings, yet it is more than probable that either one or the other writer is nearer the truth.

It is exceedingly important to know the real cause. If the queen is responsible for the discolored honey, then the remedy is easily applied. If she is not it is folly to destroy her, and we must be content to take what we can get.—Ed.]

QUEEN THE CAUSE OF SOILED SECTIONS.

Whitest Honey from Golden Italians.

BY MRS. A. J. BARBER.

I have just read the article on page 929 about greasy-looking sections, and their being caused by the peculiarities of the season. Now, I have become quite a crank about queens, and I hold the queen responsible for almost every thing that goes wrong—greasy sections and all.

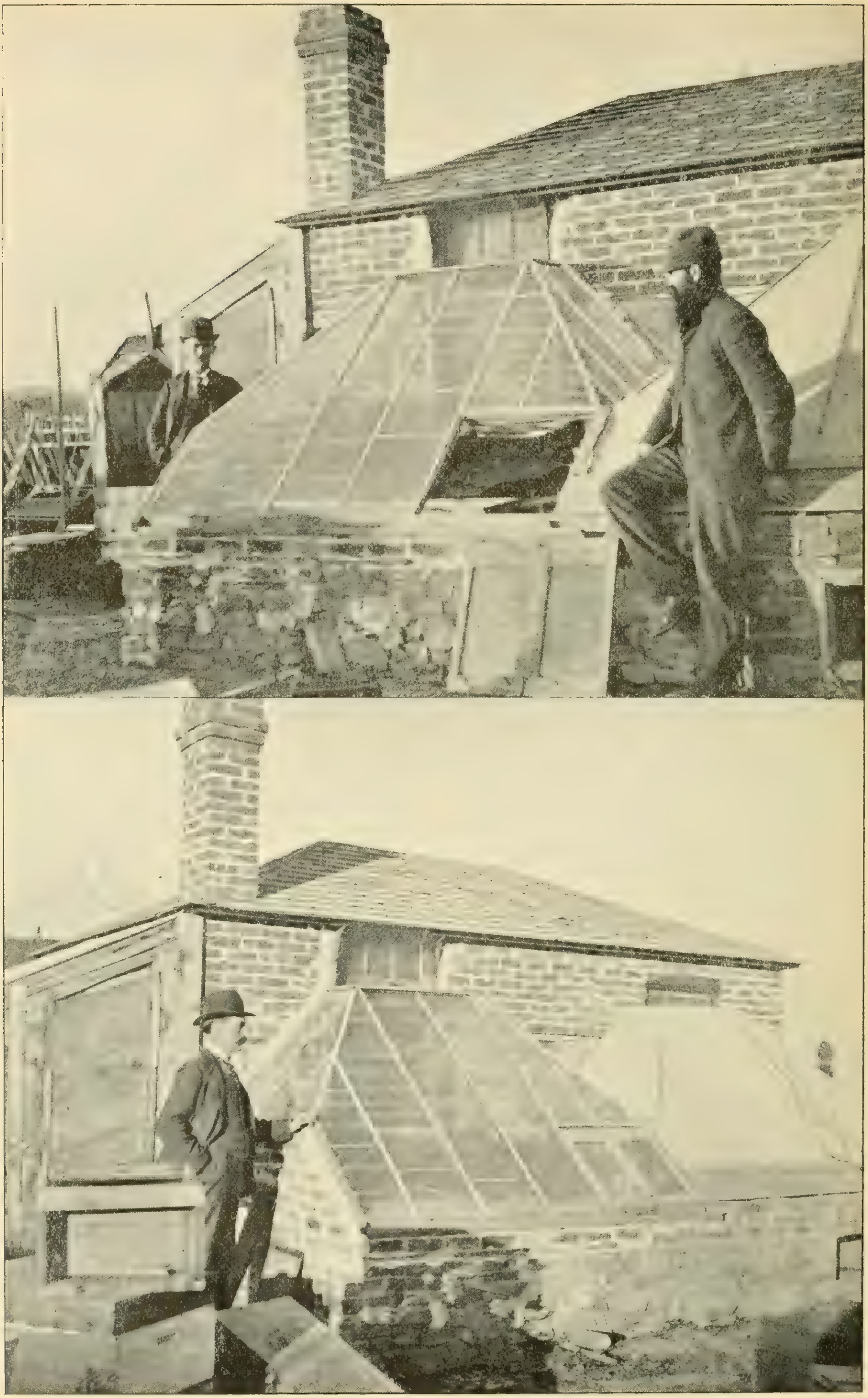
For the first few years that I kept bees I noticed that sometimes we found the sections nice and white, and sometimes the capping looked greasy. I did not pay much attention to the cause, as there was a good market, and all the honey went at the same price. Five years ago I sent to a queen-breeder in the South for six queens. I got them late in the season, so they cost me only 30 cents each. One was a black, four were leather-colored, and one a yellow. The next season I watched these colonies closely to see whether they were any better than my old stock of leather-colored Italians. I soon noticed that the yellow queen had remarkably white cappings, and that they were smooth. The black queen had white cappings, but the bees built little spurs from the face of the honey, and fastened them to the separator, thus spoiling the honey for market. The leather-colored ones were like my old stock—some capped white and some greasy. The yellow queen's cappings were so unusually nice that, as we were beginning to have a demand for white fancy honey, I concluded to see if it was only an accident that her honey was nicer than the others'. I raised 14 queens that season from her, and found that nearly all of them produced bees that capped the honey as white as paper.

The next season I requeened nearly all my home apiary. I have taken premiums for fancy honey right along, and I believe I owe it to those queens. My experience is that those white cappers produce more honey, too, than the others. I have two colonies that produced six supers each (144 pounds) this season, when some of the others did not store more than one. I have no queens to sell, but I am convinced that that thirty-cent queen has been worth more than a hundred dollars to me.

I have one of Hutchinson's queens; and if her stock is any better than my white cappers I shall say she is a "hundred-dollar" queen. I think about nine-tenths of the home-apiary comb honey this year was fancy white, while at the out-apiary, where I have not paid so much attention to the queens, I had nearly half second grade. I am going to requeen from the Hutchinson queen down there, and note the result, and compare notes with the yellows at the home apiary.

I don't believe we can overestimate the importance of the queen.

Mancos, Col.



AIKIN'S SOLAR WAX-EXTRACTOR, SHOWING FRANK RAUCHFUSS AND R. C. AIKIN. SEE EDITORIAL.

[Although I did not have the pleasure of meeting Mrs. Barber, yet I heard of her often on my trip through the State, and so I concluded that she was one of the most successful bee-keepers in Colorado. If she is correct in her theory (and she will be backed up by no less an authority than G. M Doolittle), I imagine she would have quite a demand for those yellow queens. She says she has no queens for sale; but I hope she will sell just enough to give a few of the breeders some of that desirable stock. Yellow queens and yellow bands, comb honey with pearly-white cappings, and lots of it, leave little else to be desired in good breeding stock. If you decide to sell any queens, Mrs. Barber, please reserve a good one for the Root Co.

In relation to this whole difficulty with greasy comb honey, I would say the matter is still open, and we shall be glad to hear from others as well as the principals in the debate. Hello! here is something on the other side again —ED.]

QUEEN NOT THE CAUSE OF GREASY SECTIONS.

Hybrids.

BY W. M. WHITNEY.

Editor Gleanings:—I note what you say in footnote to my suggestions respecting greasy sections, and have to say that my experience has been similar to yours; but were not the colonies laboring under quite different conditions?

This subject of greasy cappings becomes a very interesting one to me, and I think it might be a profitable study for bee-keepers during the coming season; make careful observations respecting strength of colonies; the degree of ventilation; whether the hive is exposed to the sun or is in the shade; what the season is — wet or dry, hot or cold, giving dates, etc.

My hives are all numbered, and a record is kept in a book prepared for the purpose, and it affords me great pleasure to study and note the various operations as they occur. I feel so confident that the queen is not at fault that I will agree to take all such Italian queens that may be sent me, and use them as breeders.

Now, I am just as confident that there are bee-keepers who are just as well convinced that I am wrong in this matter as they can be, and that, when spring comes, will "pinch the head" of such queens. If all such persons will kindly mail to me all such queens, properly put up, I will pay 25 cts. each to compensate for trouble of caging and mailing.

Locality has so much to do with honey production, who knows but that it has something to do with greasy sections? Brother bee-keepers, let us try it. Send on your queens and save a quarter.

They are just the kind for the extracted-honey producer, giving him absolutely ripe honey from the extractor, weighing 12 lbs. to the gallon, and ready for shipment. Yes, send along your queens. We are breeding such.

Oh! there is another matter I wanted to refer to, which nearly escaped my notice. It is this: Stenog, on page 919, referring to population of Jamaica, copied from *American Bee-keeper*, gives us "122,000 hybrids." This item excites my curiosity. Is this a cross between man and a higher or a lower order of being? How long would it take, under proper management, to depopulate the island? This may be a branch of anthropological research which may become a very interesting study. Tell Stenog to tell us some more about it.

Kankakee, Ill.

[The word "hybrid," in the case cited, meant simply cross-breeds or mongrels. It is by no means to be confined to the crossing of distinct species or genera, as the horse and ass, as is generally supposed. In the latter sense there is no such thing as a human hybrid. The children of different races of the human family are always an improvement in some respects over either parent. The Chinese have always lived by themselves, and are now practically the same they always have been; while the Anglo-Saxon family, a cross, has revolutionized the world in a comparatively short time, and made nature herself tributary to its comfort.— STENOG.]

A FLORIDA RAMBLE.

More Frosts in Northern Florida.

BY MRS. L. HARRISON.

Mr. Editor:—Would you like a rambler in Florida as well as in California? I've lately been rambling, and will tell you about it.

On the morning of the last day of January I went on board a sail-boat, to go to a point on the bay twelve miles distant. The day was cool, and there was a stiff breeze which carried us along at a lively rate, as if controlled by a mighty power, as the boat plowed the briny deep. As we sailed along we viewed the white sandy shore, upon which tall pines reared their heads, while the sand at their feet was carpeted with saw-palmetto, while the cabbage-palmetto reared their plumy heads like immense green umbrellas.

We landed at the pier, and put up at a hotel and postoffice combined. Our destination was Vernon, the county-seat of Washington County, thirty miles distant. There was a mail from there here three times per week, and I had expected to go with it to Vernon. When it came at night it was brought by a boy on horseback. The next day I tried to obtain a conveyance, but failed. Not even an ox team could be had. The night was cold, so that ice formed a quarter of an inch thick; the following night also; yet when the sun was shining I watched bees carrying in very pretty lemon-colored pollen.

The bee-hives at this place were tall box hives made of heavy Florida pine, and the bees small blacks. In answer to my queries about bees, mine host said, "Bees are no good any more; have done little or nothing for four or five years. We don't care for honey anyhow; have some now five years old, and we prefer syrup. There was a man not far off that had a good many at one time, but got tired of them, and don't care for them any more."

When land has been cultivated a number of years it is called worn out, and is not cultivated, but allowed to grow up in wild land again. Many of these fields grow up to broom sedge, and my host had one, and every room had two brooms made from it—a long and a short one. I busied myself while waiting by making some of these brooms, and I think brushes made from it would be excellent to brush off bees from combs, being more soft and pliant than broom-corn. There appear to be two varieties of this sedge.

The second time the mail came it was in a cart, and I resolved to go in it. We arrived at noon at a log house in the woods, where a postoffice was kept. While the mail was changed and horse fed I ate my lunch in the soft sweet southern sunshine. A young woman came from the house; and as I talked with her I inquired about bees. Yes, they had a few, but they did no good any more; worms ate many of them up. The past seasons had been too dry for any thing to grow.

We drove twelve miles through the pine woods without passing a house, and sixty miles without meeting or passing a team. I kept watching for objects of interest. There were the same pine woods, varied occasionally by a ti-ti or cypress swamp. Once we saw in the distance a pretty deer—how supple it was!—a doe. The colored driver said, "If I had my gun I would git dat, sure." Who would want to take the life of such a pretty creature?

I never watched bees during winter in Florida when they were not bringing in pollen. It's a mystery where they gather it. There must be pollen-bearing plants under the thick under-brush of the ti-ti's. I didn't see a blooming plant in my drive through the pine woods. The mail carrier said there were plenty of flowers in bloom during the summer.

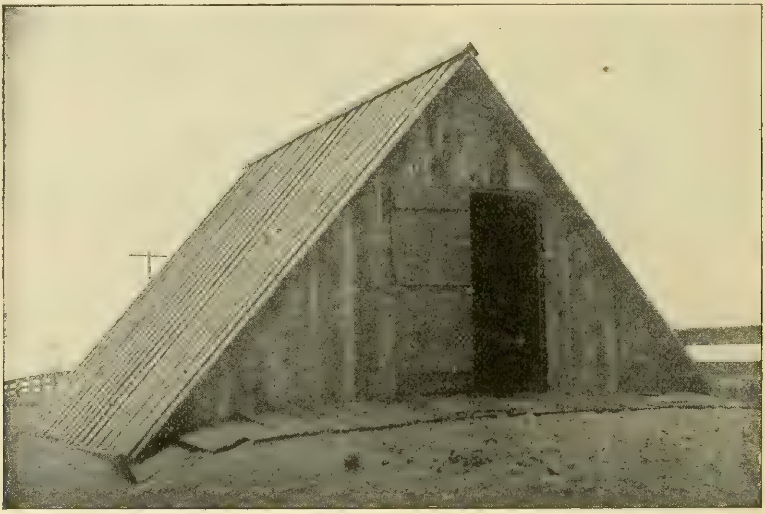
St. Andrews Bay, Fla., Feb. 17.

BINGHAM'S NEW BEE-CELLAR.

How to Construct a First-class Winter Repository.

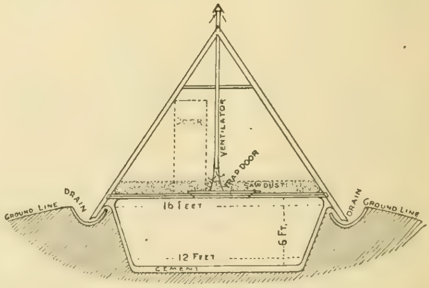
BY T. F. BINGHAM.

The view of the roof covering my practically air-tight bee-cellar is well illustrated by the cut. It is 20 ft. wide and 20 ft. long, and, as shown in sectional view, very steep, affording a large room for work above the cellar. But, what is of more value to the bees, the room is dark. It is into this room that the cellar is ventilated, or from it the bees receive the air they use without taking it from the unwarmed air outside.



BINGHAM'S BEE-CELLAR.

Your illustrator has, in sectional view, shown the ventilator as passing up through the roof in the middle of the floor. This is correct, all but in that the ventilating-tube, which is a three-inch tin conductor reaching from the bottom of the cellar two feet above the floor



over the bees, does not directly reach the outside.

The value of this modifying room will be better understood by the fact that it is in reality a part of the cellar, and not merely a roof. The cellar is in all respects a cistern. It is 16×16 ft. on the level of the ground, and 12×12 ft. at the bottom. The sills are 2×12 inches, and 18 ft. long, and lie flat in the cement of which the sides and bottom of the cellar are composed. The roof, as you will note, extends below the level of the ground, and discharges its water into board conductors leading to lower ground.

The floor above the cellar is 2 inches thick, composed of dry inch boards. Three inches of dry pine sawdust covers this floor. Every corner and crack through which air could circulate is closed with Portland cement. Three trap-doors are of the same thickness as the floor, and an easy stairway leads to the cellar. The hives are in rows on all sides, three high, directly over each other, leaving an open square in the middle of the room.

The square hives stand on their regular bottom-boards, and have a back and front entrance 11 inches by ⅞, with no possible upward ventilation or communication. The roof is made of tamerack (larch-tree) boards, one foot wide and battened with the same kind of lumber 6 inches wide, and covered with coal tar.

The cost every one will want to know. It was from $50 to $55. It now holds 90 colonies, and would hold 90 more if necessary.

The ventilating-tube reaching to the bottom of the cellar proved to be a failure. While it supplied cold air, and kept the temperature all right, it failed to dilute the carbonic gas, and has been taken out. Only the three-inch hole in the upper floor has been used for the last month, and seems all right. The extreme variation in the cellar has been 4°, being below 50 all the time, but no time as low as 45°.

Feb. 14.—Bees O. K., 47°. Outdoors, about 6°. Death-rate about 2 lbs. of dead per month for the 90 colonies. The last sweeping gave an increase of ½ lb. They are swept out every 12th day of the month, and the dead weighed. They were put in the cellar Nov. 12.

Farwell, Mich.

[As I have said elsewhere in this issue, I believe it is to be one of the cheapest and best repositories ever devised. The scheme of having a gable roof and a good thick frost-proof floor over the cellar, the latter below ground-level, is most excellent. The objection to the cellars of ordinary dwellings is, that about two feet of the cellar is above ground; and in the two feet of wall there is liable to be one or more windows through which cold and light enter. By the Bingham plan, the whole, or practically the whole, of the repository is under ground. The thick frost-proof ceiling or floor overhead, further protected by a gable roof, makes almost an ideal protection.

Incidentally it is interesting to note how little ventilation, if the temperature is right, is required. I hardly need say that Mr. Bingham, the inventor of the smoker, honey-knife, and hive bearing his name, is a man of no ordinary ability. He is a fine mechanic himself, and a practical bee-keeper; and whatever *he* says is good, *is* good in my estimation.

In an early issue we will describe in detail the hive he invented years ago, and which he has recently perfected by adding some new features.]

CONVERSATIONS
WITH
DOOLITTLE

MAKING NUCLEI, NATURAL AND ARTIFICIAL INCREASE, ETC.

Two postal cards lie before me, covered with questions put on as thick as possible; and in reading them I imagine that the questioners are right here in my office, and that we are talking face to face. Here is the conversation we are having about making nuclei, natural and artificial increase, using foundation, and clipping the wings of the queens:

"I see by GLEANINGS that you are in the habit of talking with beginners who call on you, telling them about how you would work with bees to secure the best results. I am thinking of dividing my bees the coming summer, and want to prepare for this during the early spring months. When dividing bees, is it best to rear queens for them or let the queenless part of the division rear a queen for themselves?"

"I consider any plan of division, which compels the queenless part to rear their own queen, as faulty."

"Why so?"

"Because, in the first place, *good* queens are reared only in a colony very populous in bees, *of all ages*, with honey and pollen coming in from the fields, enough to supply their wants. Of course, this honey and pollen part can be supplied by the apiarist, if deficient in nature; but the *populous* in bees part can not possibly obtain with a divided colony."

"Is that all the fault there would be?"

"No. Where the queenless part of a division is obliged to rear its own queen, such queen will not usually emerge from her cell before the twelfth day. If she emerges earlier she will be likely to be of even more inferior quality than she would be otherwise. Then it will naturally be ten days before she will commence to lay. Now add to this 21 days, as the time before any of her eggs will produce bees, and we have a period of 43 days without any addition of bees to that divided part, except what came from the eggs of the mother queen before the division. By this time the colony becomes very weak in bees, from the constant loss which is occurring, so that such a division is not likely to do more than become ready for winter, if it does even that much."

"What would be the gain by the other plan?"

"If a young laying queen were given at the time of the division, as always should be done, there need be no more than from one to three days' break in the eggs, in this part of the division, which break would be insufficient to cause any serious loss in bees. And if a ripe queen-cell is given, a gain is made of 11 to 12 days, which would often be equivalent to some surplus honey, and always insure the colony being in much better shape for winter."

"How would you make the nuclei for raising the surplus queens you wish?"

"After trying every thing proposed in the way of making nuclei, I know of nothing better than the following for the apiarist who wishes only queens for use in his apiary. It is seldom that any bee-keeper does not have a few weak colonies in the apiary in the spring. Allow these weak colonies to build up only as fast as they naturally will, instead of giving them brood from stronger colonies, as most do, to the great detriment of the stronger and of little advantage to the weaker. Then, about 15 to 20 days before it is expected to want queens for the division, go to these weaker colonies, remove the frame of brood (bees and all) having the queen on it, setting the same into an empty hive where you wish a nucleus to stand. Now take all of the other frames, not having brood in them, from the same hive, and place them, with all of the adhering bees, in the same hive having the frame of bees, brood, and queen. In this way enough bees stay with their queen to hold the frame of brood in good shape, and if you have one nucleus ready to take a queen from in a few days, should you wish one before you have young laying queens. Two days later, take an empty hive and go to the one having the remnant of the brood from which the queen was taken, setting this hive of brood enough to one side so that the new hive can partly occupy the old stand. Now take half of the brood and bees and place in the new hive, giving each a frame of honey if necessary, when you have two more nuclei ready for ripe queen-cells, these latter having been looked after long enough before so they will be ready for use at this time. By thus placing the hives, the returning bees will divide between the two so that each will be about equal. If one should draw more than the other in bees, move it a little further off from the old stand till you have them about equal. In this way three *good* nuclei are made, with very little trouble, from each weak colony in the spring."

"That seems plain. Now tell us how to make artificial increase so we can secure good strong colonies and a good yield of surplus honey."

"As you put the question, a very moderate increase will be what you wish; and this is the plan I have used under such circumstances for the past 25 years: About eight to ten days before your expected honey-flow, go to a populous colony, which for convenience we will call No. 1, and shake all of the bees and queen from their combs into a hive filled with empty comb or frames filled with foundation, placed where the old one stood, placing the surplus arrangement from the old hive on the colony thus made. In this way you have a strong colony containing all the bees and queen from one of your very strongest colonies, a hive full of comb or foundation, and the partly filled sections from No. 1, all being in readiness to take advantage of the harvest as soon as it comes. Now take the combs of brood taken from No. 1 to No. 2, and set them on No. 2's stand, having previously moved No. 2 to a new stand a rod or two away. Just before setting the combs on the stand of No. 2, go to one of your nuclei and get the comb the queen is on and take it, bees and all; and as soon as the combs are on the stand of No. 2, shake the bees and queen from it in front of the hive on No. 2 stand, and let them run in with the bees from No. 2, now hovering about trying to find their old home. Put sections on this hive, and the work is done. Thus you have a colony composed of a full hive of combs and brood, a good young queen, and workers to protect her, and all the field or working force from No. 2, which make a big strong colony ready for business as soon as the honey-harvest arrives. No. 2 has a hive of combs and brood, their old queen and sections partly filled, but they have lost their working force. In from eight to ten days they are quite well stocked with workers again, when they are also in fine shape for the harvest which is now on. I have told you this plan at length as you wished it made plain, and because I consider it the best plan of artificial increase in existence. If you wish a greater increase, go through the same operation again just after the harvest, less the sections, and see that No. 1 is fed in some way, or supplied with combs of honey."

"Which is better for a beginner — this or natural swarming?"

"The beginner might try each, the artificial on a small scale till he becomes accustomed to it. Natural swarming has a fascination about it that no mode of artificial increase can possibly have. If one can be about home, natural swarming is a good way of increase where persons desire to double their colonies, and have the ability to prevent all after-swarms."

"In natural swarming would you clip the queens' wings?"

"Yes, by all means, as this not only prevents swarms from absconding to the woods, but makes you master of the situation where two or more come out or cluster together, and saves all climbing of trees, cutting off limbs, etc., they hiving themselves by returning, you having taken away the old colony while the swarm is out, substituting a new hive in the place of the old one."

"How about losing these clipped queens in the grass?"

"In all well-regulated apiaries the grass is kept cut short during swarming time, if not at all times; and if each stand has an alighting-board running from the entrance of the hive to the ground, as always should be the case, very few queens will fail to go back to the hive when the swarm returns, if the apiarist is not present when the swarm issues. If any should happen not to return, a few bees will always cluster about them, so the queen can be found by this cluster of bees by glancing over the ground in the apiary, on the apiarist's return."

"Which is more profitable when using natural swarming—having the frames and sections filled with foundation, or just starters?"

"As to the sections, I now say fill them *always*. More salable section honey results therefrom. As to the frames, consult your time and your pocketbook. If time is precious, so you can not look after the combs when being built from starters, and your pocketbook can afford the foundation, then buy it. If the contrary, then you can well make it pay to have the bees build their combs in the brood-frames as long as they will build worker comb. When they take to building mostly drone comb, a few frames filled with foundation, to use at such a time, will well pay, even if you have to pay $1.00 a pound for the same."

"One more question, a little off the order of the rest, and we'll be going. How can you tell when a colony is about to supersede its queen?"

"This is generally told by a decrease of brood in the hive, or the brood being scattered about in different parts of several combs, instead of being compact together; and, together with these conditions, the starting of queen-cells while the old queen is present in the hive. If in the swarming season, the scattered and scanty brood is what we go by. If out of the swarming season, then the starting of queen-cells, the same having eggs, larvæ, or pupæ in them, tells us on first sight that the old queen is about to be replaced with a young one. But it is often the case that, after all of these things looking toward the supersedure of a queen, the bees will change their minds (?) and destroy all the cells started. If they do this they will often go to feeding the queen in an extra manner, when she will put in a lot of brood as compact as, and nearly to the amount of, that done by a young queen. And I have known such about-to-be-superseded queens taken away after the young queen was hatched, and roaming over the combs with their mother, to keep up a good rousing colony for two years, when introduced to the same, this showing that the bees themselves do not always know just what is best."

HEADS OF GRAIN FROM DIFFERENT FIELDS

THE DOOLITTLE DIVISION-BOARD FEEDER, AND WHY NO FLOAT SHOULD BE USED.

Tell your readers to keep the float out of the Doolittle feeder. Ten years ago when I first made them I thought some of the bees would get drowned, so I made some floats for my feeders, which were even full size, Gallup frame, 2 in. inside measure, with sides coming up to ¾ in. from top-bar. After filling up the feeders I laid on the floats, took out two frames of empty comb, and hung the feeders in their place. Now for the result. In almost every instance the float would work to one side or the other, and stick there; and then, after a little, with the weight of bees on it, it would fall and drown about 50 bees, more or less, so I stopped using the float, and had no more trouble with dead bees in the feeder. All things considered, the division-board feeder is a long way ahead of any other feeder for me. H. W. WHEELER.

Mt. Pleasant, Feb. 10.

[While I never tried floats in the Doolittle feeders, I have tried them in other feeders of similar construction; and from what experience I have had I felt very sure that they would be worse than useless in division-board feeders, and have so advised our readers. Mr. Wheeler's experience above is exactly what I should expect.

Since I told how to make a division-board feeder, there have come in dozens of letters praising this particular article. We did not try it to any great extent until last season, but found it so immeasurably superior to any thing else that we shall use it in the future almost exclusively. For spring feeding there is nothing that will compare with it; and now is a good time for bee-keepers to make them. For particulars regarding their construction, see GLEANINGS for Dec. 1, page 895.—ED.]

TEMPERATURE OF A BEE-CELLAR.

I have a few colonies of bees in my cellar, and the temperature is down to about 15 above zero. I have chaff cushions on my hives. Last year I did the same, and they wintered well. Now, would that be too cold? I have made a tin covering to go outside of a big Rochester lamp, so as to make it dark in the cellar, and it works satisfactorily. I can raise the temperature with it. Now, will the burning of that lamp in there affect the air in any way so as to destroy my bees?

Luther, Mich. A. E. HOVEY.

[A temperature of 15 degrees above zero in the cellar is altogether too low; and if this continues for any great length of time you will probably find that many of your bees will be dead before next spring. A large lamp in the cellar to raise the temperature may be used, but it is better to put the top of the chimney of the lamp at a point where the burned gases of the lamp can be conveyed up the stove chimney. A lamp has been and often is used to warm up a cellar, without any provision for carrying off the gases; but if there are many colonies in the cellar it is liable to be attended with bad results. In any case, be sure the lamp is turned high, or high enough so it will not throw off that disagreeable smell so often noticed when a lamp is turned down. Instead of using artificial heat I would abandon your present cellar or bank it up so that it will resist extreme temperatures outdoors, with very little variation inside. The cellar elsewhere described in this issue by T. F. Bingham will, I think, remedy your trouble with low temperatures.—ED.]

EDITORIAL BY E. R. ROOT

W. L. COGGSHALL, of West Groton, N. Y., whose biography appeared in our Feb. 1 issue, has recently bought more bees, so that now he has 16 different apiaries, embracing something like 1400 colonies; and yet he admits that his health is not quite as good as it used to be. How perverse some business men are! When they are overworked, then they go forthwith and add to their burdens by increasing the amount of their regular labors. Say, Lamar, you will have to be content hereafter to use your brain for other people, and let them furnish the muscle.

THE NATIONAL BEE-KEEPERS' UNION MERGED INTO THE NATIONAL BEE-KEEPERS' ASSOCIATION; AN EXPLANATION.

THE accompanying letter from Thomas G. Newman, General Manager of the old National Bee-keepers' Union, which has now been merged into the National Bee-keepers' Association, has this to say:

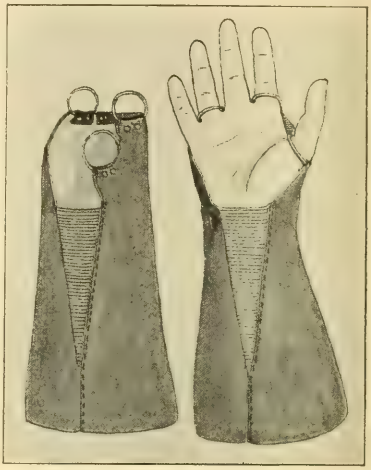
> The National Bee-keepers' Union, having almost unanimously adopted the new constitution, as well as the U. S. Bee-keepers' Association, that constitution takes effect at once.
>
> Article 4, Section 3, says that the President, Vice-president, and Secretary must be elected at the annual meeting. As that does not occur until next fall, a vacancy exists in these offices. Article 7 says that "any vacancy in the Executive Committee, which is composed of these three officers, may be filled by the Board of Directors." It will be in order now for the Board of Directors, by mail or otherwise, to elect the President, Vice-president, and Secretary, to fill the vacancies, which were elected by the U. S. Association at Philadelphia, of which, I believe, you were President, with, of course, G. M. Doolittle, Vice-president; Dr. Mason, Secretary, or any person else that they may agree upon.
>
> You will readily see that the constitution, not going into effect until after its adoption, could not recognize the officers elected by either organization, prior to amalgamation. It was my intention to have inserted on the ballot the same officers that were elected at Philadelphia; but, not being able to see, I had my clerk look at the *Bee Journal*, where a list of the officers of the U. S. Bee-keepers' Association was given each week, and copy them into the ballot, not remembering that the new ones did not take office until the first of January, so we got the officers of the previous year on the ballot by an oversight on account of my lack of vision.
>
> This, however, makes not the slightest difference, and was intended only as a compliment, for we were voting on the officers called for by the old constitution of the National Union, which was President and five vice-presidents (not one only), etc.
>
> My physical health is improving slightly, but my vision does not appear to have improved at all, I am sorry to say. I had hoped that the improvement in health would restore the sight; but I must wait, using all the remedies within my power, and hope for the best. THOMAS G. NEWMAN.
>
> San Francisco, Cal., Feb. 14.

A NEW BEE-GLOVE.

THE illustration herewith shows a bee-glove devised by C. I. Graham, of Los Banos, Cal.

There are quite a number of practical apiarists, among whom may be named the Coggshall brothers, who wear heavy gloves with the ends of the fingers cut off. It is well known that bees at a sudden onslaught are more liable to attack the back of the hand or wrist than any other portion of that member. Cutting off the finger-tips gives one the advantage of protection from stings as well as the convenience of the natural touch of the fingers.

Mr. Graham has gone one step further, and devised a glove something on the principle of the Congress gaiter. The wrist portion of the article is made of some stout strong cloth and an elastic material the same as shown in shoes. Instead of shortened glove-fingers every other finger passes through small iron rings; and these are said to be sufficient to keep the protector tightly over the back of the hand. The elastic rubber causes the wrist portion to fit tightly, preventing any bees from getting up the sleeve, and the rings give the freest possible use for the fingers and palms of the hands.



I have not tried these protectors any more than to put them on. I don't know, but I *think* I would not on a hot day like to have a pair of tight corsets, so to speak, around my wrists. I have used with a great deal of satisfaction a pair of loose straw cuffs to prevent soiling of my sleeves, and to keep bees from crawling up my arms.

THE SPRAYING LAW IN NEW YORK IN DANGER.

MR. W. F. MARKS, of Chapinville, N. Y., president of the New York State Association of Bee keepers' Societies, writes that a bill has been introduced in the legislature, amending the spraying law so that experiments may be made at experiment stations, and by individuals. While this is innocent enough on its face, yet the measure was framed by the opposers of the spraying law, who, having been unsuccessful in having this same law repealed at the last session of the legislature, are now taking this apparently innocent but nevertheless effective method of taking the very teeth out of the law. Mr. Marks says that the experiment stations or the experimenters have none of them asked for such an amendment; and he desires all the bee-keepers of New York to write to their senators and representatives at once to protest vigorously against the passage of the amendment under conideration.

Let me urge on the bee-keepers of New York not to put this off, nor assume that somebody else will do it for you. Sit down *at once* and write your senator and representative, and then you will have done *your* duty.

When I was in Colorado I understood that a similar attempt was made to practically kill the spraying law in Colorado; and it behooves the bee-keepers of the different States having such laws to be on the watch, because there is a lot of ignorant fruit-men who are up to just such tactics as this.

DEAD BEES ON A CELLAR BOTTOM; HOW MANY CONSTITUTE GOOD OR BAD WINTERING.

REFERRING to the statement that "75 or 100 colonies in a cellar 10×10 may furnish dead bees before spring sufficient to cover the floor an inch or two in depth" (GLEANINGS, 804), Mr. Taylor, in the *Review*, says, "A little calculation will show that one inch in depth on the space specified would amount to somewhere in the neighborhood of 209 quarts, and two inches to about 418 quarts; so that Mr. Root's statement is equivalent to saying that colonies of bees in a cellar may lose anywhere from 2½ to 5 quarts of superannuated bees from a colony during the winter. . . . . In my own cellar the dead bees seldom come anywhere near covering the floor from sight, and about a pint to the colony would be a fair average loss."

In trying to verify these figures, one meets with some difficulty. It would appear that the whole cellar bottom (100 square feet) is considered covered to a uniform depth with bees. The statement in GLEANINGS was certainly not so meant, and should hardly be so considered. It is hardly likely the inquirer was misled by the reply in GLEANINGS.

Admitting, however, that the dead bees *might* be evenly distributed clear out to the cellar walls, let us see how the case can be figured. Suppose that in some way the hives are supported by shelves suspended from above, so that the bees may be distributed evenly over the entire floor to a depth of two inches, that would make 428 quarts (instead of 418); and as one would naturally suppose that this greater depth would be the result of the greater number of colonies mentioned, 100, that would make about 4¼ quarts per colony. That is certainly bad enough, without calling it 5 quarts, as Mr. Taylor does.

While it is *possible* that the hives may be thus swung from above, leaving the entire floor to be covered with bees, it is much more likely that the hives should rest on stands as large as or larger than the bottoms of the hives. With 75 or 100 colonies in a room 10×10, one would be likely to put them on about 25 stands, piling three high for the 75, and four for the 100. Each stand will occupy probably 360 square inches or more, which space will be clear of bees. Deducting the space occupied by 25 stands leaves 5400 square inches as the floor space for the dead bees; and supposing this is occupied clear out to the walls, an inch depth will make 80 quarts, or $1\frac{1}{15}$ quarts per colony if 75 colonies are present. If the depth on the floor is two inches, there will be 160 quarts, or $1\frac{3}{5}$ quarts for each of 100 colonies. Mr. Taylor says he loses only a pint to a colony; but the figures here given, even though larger than should be fairly understood from the statement in GLEANINGS, are very likely to come nearer the mark in the average bee-cellar than a pint to a colony.

Dead bees on the cellar bottom will cover it to a greater depth than the same number of live bees. They sprawl out more, and an actual count shows 2664 as the number of dead bees in a quart, when gathered from a cellar bottom. That would give 4262 bees in $1\frac{3}{5}$ quarts, which would be raised in a Langstroth frame a little more than half filled with brood. No doubt many would be gratified to have the winter loss no greater.

The matter is hardly worth occupying so much space, but it shows how wide of the mark one can be when he becomes a professional fault-finder.

A QUIBBLE ON A NAME.

ON page 858 of GLEANINGS for last year, in referring to the peculiar bee-disease that was raging in certain portions of New York I went on to give the reasons why I believed it to be entirely distinct from foul brood; and among them I incidentally mentioned a very unimportant consideration, namely, that there was a divergence of opinion as to the cure of foul brood, and that possibly for this reason there might be two kinds of foul brood. This proposition Mr. Taylor very vigorously combats by saying, "Scientifically speaking there can not very well be two kinds of foul-brood disease." Exactly. But, Mr. Taylor, please hold yourself to the text, and note that I was not "scientifically speaking." If you will refer back to the article in question you will see that I referred to this new bee-disease as "foul brood so called;" as "foul brood, or what he supposed to be that disease;" and then when speaking of the other foul brood I referred to it as "real foul brood," as "*Bacillus alvei*." Not even a beginner, much less an expert, should be confused when such distinctions are thus drawn, and, besides, it is a matter of little importance whether the new bee-disease in New York *before it was named* was called "foul brood so called," or something else. As it is, Mr. Taylor has perverted the intent of the article and confused the issue. No doubt this was unintentional.

WINTER LOSSES UP TO DATE; IDEAL WINTER REPOSITORIES.

So far, judging from general correspondence coming in, bees are wintering well, while a year ago at this time we had heard of a great many severe losses. The winter thus far has been rather favorable. While there have been cold snaps, they have not, in the majority of locations, been long continued. In Ohio we have had no real cold spell longer than a week at a time, followed by a week, or even two weeks, of warm or "sloppy" weather. As I have said before, bees outdoors, at least, can stand severe cold for a week very comfortably; but when it lasts two or three weeks, or a month, the effect is apt to be (not always) disastrous. After weeks of zero weather or ten or fifteen degrees warmer, with high winds, I have seen how the bees have eaten away all their stores within an inch or so of the cluster, but which, on account of the low temperature, was not able to move to the stores, and consequently starved. When these warm days come on, the cluster is broken up and re-formed right over or near the stores, and then it is ready for another cold streak.

Of course, bees in good warm frost-proof cellars where the temperature goes neither very high nor very low, the weather outside has very little to do with their wintering. If I were to have a bee-cellar at all I should want one of just this sort; and it strikes me that the Bingham repository illustrated elsewhere in this issue is the best that has yet been devised; first, because it is the cheapest; and, second, because it gives the very best results obtainable. If there were a living-room above the frost-proof floor Bingham could hardly secure as good results. That being the case, house cellars are not ideal repositories.

SOLAR WAX-EXTRACTORS IN COLORADO; HOW R. C. AIKIN MAKES AND USES THEM.

AFTER the Colorado convention Mr. Rauchfuss and myself spent Thanksgiving with Mr. Aikin, president of the Colorado State Bee-keepers' Association, a prominent and influential bee-keeper, and a prolific writer on bee lore. On this occasion we inspected with pleasure a number of his methods and devices.

There are a great many things that I desire to say in connection with Mr. Aiken and his methods; but at this time I wish to speak of his mammoth solar wax-extractor, constructed along somewhat different lines from those usually made. With my ever faithful kodak I managed to get Mr. Frank Rauchfuss (secretary of the organization just named), with a great deal of persuasion, amounting almost to a command, to stand near the extractor, or what looks like a greenhouse. He finally obeyed, and then I snapped the kodak as he stood there. After a little Mr. Aikin came out, and showed us how he operated it.

"Now," said I, "Mr. Aikin, I am sorry I did not get you in the picture. Please take your position and I will take another snap shot." He demurred, but finally acquiesced, and the view was taken. Both pictures are shown on page 172, and testify to the general excellence and sharpness of detail that one can secure with a No. 4 folding kodak—an instrument that I believe permits of a larger range of subjects and greater variety of uses, than any other camera made.

Now, then, for the solar wax-extractor. As will be seen, it looks very much like a small greenhouse. In fact, it is built a good deal on the same plan. The floor or pan of the extractor, so to speak, is built right over a brick oven, so that not only solar but artificial heat may be utilized.

"Why," said I, "Mr. Aikin, what is the sense of having artificial heat when you have so many days of bright strong sunshine, with an atmosphere so clear that there is neither mist nor rain a greater portion of the year?"

"Well," said Mr. Aikin, "try it for yourself. You will discover that you can not only do better work, but secure much more wax out of the dirt and refuse by such an arrangement than you can by either source of heat independently. The heat from the sun acts only on the top of the mass. The melted wax runs down and lodges in the refuse, collects, and stays there. By my plan I apply a gentle heat *beneath* by means of the brick flue, or oven as you see. The heat from *above* and the heat from *below* cause almost every particle of the wax to flow out of the refuse, and run into the pans in front."

Then he took me inside and showed me his brick flue, or oven, by which he supplied artificial heat from beneath.

"Well, now," I said, "if such a combination arrangement is a good thing for Colorado, with its beautiful perpetual sunshine, it must be much more effective in Ohio, where we have days and days of cloudy sky, of mist, of rain, and of dew."

"Exactly," said Mr. Aikin; "and, as you see, this cheaply constructed affair is built on the ordinary plan of a small greenhouse, using large and small sizes of glass, such as one can get cheaply. I built the whole thing myself, even including the building in the rear."

"You seem to be a sort of jack at all trades," said I.

"Well, a bee-keeper has to be, or at least *I* have to be," said Mr. Aikin, with a smile. "There are days when I can not do any thing else, and I might as well do it myself as to employ an expensive carpenter or a mason; and then," he added with a twinkle, "I get a lot of fun out of it in the bargain."

The building in the rear is a sort of workshop located on one end of the apiary. In fact, a few empty hives can be seen in the foreground just in front of Mr. Rauchfuss, in the lower picture.

I omitted to explain that the wax is diverted to one side as it runs down the inclined pan, as seen in the picture in the opening, then flows from one pan to another *a la* Rauchfuss, as was explained on page 769 of last year.

I am getting a collection of pictures of people just as they appear "every day around home." Our readers have already seen a specimen that I took of my father; and it is pronounced by every one natural, because he is not "fixed up for company." Mr. Aikin, in the picture above, hardly suspected my designs until I had captured him as the picture shows in the top view. As to Mr. Rauchfuss, I have had trouble with him a number of times because he would not obey orders—that is, get in front of the camera when I wanted him to; but I caught him a number of times, and now I am going to have my revenge by showing him up to the world in his true light. I shall have more to say of him and Aikin again at another time; indeed, I have been *Aikin* to do so.

OUR HOMES,

BY A. I. ROOT.

Righteousness exalteth a nation, but sin is a reproach to any people.—PROV. 14:34.

My talk this time will be rather "Our *Nation*" instead of "Our *Homes*." I am not a politician, and I am not very much versed in matters of government; and it might seem to many that I am very presumptuous in undertaking to even discuss matters that center about the very head of the government of the United States; and as I take up my task this morning I realize perhaps more than I ever did before the need of grace and wisdom and understanding from the great Father above. Yes, I need the influences of the Holy Spirit to guide and direct this weak and humble voice of mine as I attempt to talk to the fathers and mothers of our land.

Our readers are well aware that I am a member of the Ohio Anti-saloon League; in fact, I was present at the very first meeting that was called for organizing such a league. As a consequence, I have been deeply interested in all temperance measures, not only for Ohio, but for the whole United States. During our late war, when we were told intoxicating liquors were absolutely forbidden in the navy, with all our other temperance people I thanked God for such a wise and righteous law; and when the brewers of our land, with the army canteen, began furnishing our soldiers beer by the carload, I, with others, sent up a vehement protest. All temperance people united, and a great battle was fought. But the enemy, with their millions, contested the matter inch by inch. It was only by hard earnest work and fervent prayer that we prevailed, and passed a law forbidding the sale of beer and other intoxicants in the *army* as it is in the *navy*. We knew at the time that the enemy was without conscience and without scruple. We knew they would murder law or human beings or any thing else rather than be stopped in this money-making business of selling beer to the army. But we did *not* know, however, that they would dare to go to such lengths (especially at the very *head* of our government), as to declare boldly and unblushingly that black is white and white is black.

On page 369 of this journal for May 1, last year, I spoke of the matter. I alluded to the fact that Attorney-General Griggs declared that, in his opinion, the temperance law, which we had secured in *spite* of the combined powers of evil, did *not* mean that the canteen traffic should stop, but that it should *keep on*. Temperance people stood aghast. This piece of work seemed to be an outrage on good sense and on all law and justice, and we thought it *could not* be true. Such brazen audacity was never heard of anywhere, let alone by the Attorney-General of the United States. On page 553 of this journal for July 15, last year, I alluded to it again. Griggs' decision made such an uproar that something h*ad* to be done. A delegation of the best temperance people of our land called on the President. They were intending, also, to call upon Griggs himself, if I am correctly informed; but the President begged them to leave the matter with him. He told them the Attorney-General had no doubt made a mistake that he would be ready to rectify, adding that he was an able lawyer, and a man honest and courageous. The President promised this temperance delegation that, if they would leave the matter in his hands, he would look into the matter *personally*, and whatever was not right should be made so.

The Christian people and the temperance people of our land then waited, of course, a reasonable length of time for the President to report. I need not tell you the story of the letters, telegrams, etc., that were sent to the President during the past six or seven months. I wrote a letter myself that was promptly acknowledged by the proper clerk, stating that the letter would be presented to Mr. McKinley himself in due time. Very likely there has been such a quantity of letters of similar import the President could not read them all nor even listen to them all. These appeals came not only from temperance organizations, but from Christian people, from the ministers of the United States, and the temperance and religious papers. But no reply was made whatever—at least I can not learn of any reply of any sort having been made. Our President did not even keep his promise to the temperance delegation—that is, if he did look into the matter personally he made no reply whatever. I have read the dailies as I never read them before. I have carefully scanned every thing in regard to our President (his whereabouts and doings), to see if mention or notice was given of the matter.

Perhaps I might mention here that, a month or two ago, the Presbyterian people of the United States united in a body, and appealed to the President to have the tremendous importation of beer and American liquors to the Philippine Islands stopped. The papers published by the beer interests declare the statement is exaggerated in regard to the number of American saloons in Manila. But our soldiers who come home have been giving us the facts continually. They declare, one after another, that there has been no exaggeration. The American idea of carrying civilization to the new possessions belonging to the United States seems to be in flooding them with beer; and a Milwaukee brewery boasts of the hundreds of carloads they are shipping. The United States was to establish schools and colleges among the Filipinos. Now, I do not know how many schools and colleges have been established; but the brewers of America have been teaching the ignorant natives (as our people have been calling them) to drink beer, and to buy it, faster than all the missionaries and teachers combined together could educate and inculcate righteousness, purity, and temperance.

Well, a few days ago it appears that, when everybody else failed to get the President to even notice our Christian temperance people, a delegation from the W. C. T. U. succeeded in obtaining an audience. We are told the President courteously listened while the whole matter was placed before him and explained in detail. These ladies then showed him letters from more than 200 prominent ministers and educators, protesting against the Griggs interpretation. What did he say? Just nothing, more than that the said decision would *have to stand*. Let me digress a little right here.*

Although the President himself has not said any thing in extenuation of this awful outrage, some excuses have been trumped up for such a decision. One came out in the daily last fall. It said the question had been asked to 600 army officers as to whether the army canteen was deleterious or otherwise to the morals of the soldiers. I have not the document at hand, but it was claimed the result was something like this: Only two or three officers—perhaps half a dozen in the whole 600—voted against the canteen † Now, first, let us suppose this to be true. Does even that justify breaking law and *defying* it? ‡ I suppose every friend of temperance *knew* the statement was untrue at first glance. No doubt the brewers and their agents did get the names of 600 officers in the army who were in favor of open saloons among the soldiers. Perhaps they worked so sharply and carefully that they ran on to only half a dozen (by mistake, doubtless) who voted against the canteen. The National Anti-saloon League now has its headquarters at Washington, and an office there, so I am in a position to know what I am talking about. Furthermore, a relative of mine has been in the employ of the government in a position that takes him among soldier camps, and he has given me a true statement of affairs.

The laws of the United States are pretty well enforced in almost every thing that does not touch the liquor-traffic. The only reason why the offenders in this line escape is because of the immense amount of money they handle, and because of the tremendous sums that the traffic yields, *day and night*, *week days and Sundays*. The liquor-dealers and brewers occupy high positions. We know all about this. It makes *trouble* to wage war or even to *try* to enforce the laws. These whisky-loving millionaires have got into politics as a matter of course. They have intrenched themselves and fortified themselves through all the avenues of the nation. They have their agents and "missionaries" (?) in all lines of business. They are getting into our schools just as fast and as far as they can, and they are doing the same with our Christian churches. Some of our religious periodicals are defending them. Members of churches are persuaded to fight the Anti-saloon League, and then their statements are heralded far and wide. Why, if there was not a righteous and just God above, and if we had not his promises in his holy word, we might as well give up and let the liquor-traffic *own* every thing and *manage* every thing. God forbid! There is a righteous and just God who rules the universe in spite of Satan and all he can bring to bear. Let me digress again a little.

We take and read the intemperate periodicals as well as the temperance and religious papers. Now, the whisky politicians of Ohio do not, of themselves, claim they can muster up more than 30,000 or possibly 40,000 to vote on their side. They have really been snowing us under with this limited number, when we have here in Ohio not less than *200,000* voters who are members of churches. The reason why this small number prevails over the larger is because Christian people are indifferent to matters of state. They are hard-working, busy, peace-loving, and law-abiding people, and sometimes do not even take the trouble to go to the polls and vote *at all*. God is punishing us for our half-heartedness and for our sins of omission.

Now, there is just one religious periodical that makes a sort of defense of our President, and I wish to make some extracts right here from the *Independent* for Feb. 8. The *Independent* first takes up this matter (of criticising the President) because, as he is a member of the M. E. Church, he can not have the privilege of acting according to the dictates of his own conscience in the matter of drinking intoxicating liquors at public banquets. We will not quarrel with them—at least just now—on this ground. Read the following extract:

> But a more serious charge is made against him by the same persons, who attack him for not banishing liquor, under the canteen law, from the military canteens. The question was a legal one, whether the law forbade the sale of intoxicating liquors, and, as he was obliged to do, the President referred it to his Constitutional legal adviser. Attorney-General Griggs told him the law forbade the employment of soldiers to sell beer, etc., but not of civilians. He was obliged to follow that opinion, or get it reversed by other special advice. Secretary Root is a fine lawyer, and he told the President the same thing. The lawyers of the Cabinet agreed with Mr. Griggs. That had to end the matter so far as the law was concerned. We do not wonder that the interpretation seemed strange and forced, for it was supposed that it was drawn up to suppress all sale of alcoholic beverages on military premises. But we suspect that there was some chicanery in the wording of the bill. It forbids, first, that any soldier or enlisted man shall sell intoxicat-

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* By the way, what sort of example is the Attorney-General of our nation setting before the younger attorneys and the lesser attorneys of our land? With all the other improvements and advancements, has not the legal profession advanced also? or are we to understand that the summit of legal attainments at the present time is to find out how we can best evade law or avoid it? or, if you choose, ignore law and trample it under foot? What sort of precedent is this, standing out so prominently at the very heart and head of our government? And if the thing is not bad enough as it is, must we have a President who stands by such an Attorney-General, and says such law, or evasion of law, rather, *has got to stand?* Not only at every State capital, but at every county-seat, we may expect to see this thing duplicated. In fact, it *is* being duplicated, right along. May God help us!

† By the way, what a tremendous tribute(!) this is to the morals and temperance principles of the officers in our United States army—that is, if the statements are true!

‡ Our good friend W P. Root suggests, while I am dictating this, that if some great lawyer had said, when Lincoln issued his proclamation freeing the slaves, that, instead of abolishing slavery, it was designed to keep them in bondage for all time to come, it would be on a par with the Griggs decision. Thank God there was not any lawyer at that time to make such an iniquitous decision; and even if there had been he would have had a rough-and tumble fight with the stalwart rail-splitter of Illinois before he ruled the nation even for six or seven *months* as Griggs has done.

ing liquors in these canteens. Would it not have been much simpler to have directed that no liquors shall be sold by anybody, if that was what was intended?

To make it plain to *everybody* we give a copy of the law right here:

> No officer or private soldier shall be detailed to sell intoxicating drinks as a bartender or otherwise, in any post exchange or canteen, nor shall any other person be required or allowed to sell such liquor in any encampment or fort, or on any premises used for military purposes by the United States; and the Secretary of War is hereby directed to issue such general order as may be necessary to carry the provisions of this section into full force and effect.

Now, inasmuch as the voice of the people brought polygamist Roberts to a realizing sense of his iniquity, can not the voice of the people in like manner give Attorney-General Griggs to understand that there is a time when forbearance ceases to be a virtue?

The *Independent* goes on to say:

> Then the law goes on to require that no intoxicating liquors shall be sold on any military reservation, post, "or *other* military premises." "Other" than what? The lawyers say other than what had been previously provided for, other than the canteens in which soldiers must not be barkeepers—but in which, by implication, civilians may. That was not the intention of the temperance men who urged the law, but we suspect it was the idea of the men who drew it up, and it can legally be read into the words. The execution of the law is in the hands of the military officers of posts and regiments, and they generally want beer, etc., sold. We believe with General Howard, General Shafter, and many other officers that it is better to have no liquors on sale in any government grounds or premises; and we suggest that the proper thing to do is not to abuse the President for being guided by the lawyers of his Cabinet, but to put a new and clear law through Congress, and we warrant the President will sign it.

The law was drawn up by Mr. Wilbur F. Crafts, of Washington, D. C. I have heard Mr. Crafts speak at our Anti-saloon League meetings. He is a man of scholarly attainments, a clear thinker, and one of the brightest and clearest speakers I ever listened to. My impression is that the reason why he framed the law just as he did was that there should be no loophole to creep out of or evade, for he knew from past experience what the liquor-men would probably *try* to do. In using the phrase "or any other military premises" he is simply talking in legal phrase. In almost all of our laws we have this repetition that seems to an outsider useless and uncalled for. But we are told the repetition is to make the matter exceedingly plain, and so there can be no evasion. The explanation given by the *Independent* in regard to that word "other," it seems to me, is about the thinnest and flimsiest logic that I ever heard *anywhere* on the face of the earth. The supposition that Griggs knew nothing of the conflict that has been going on between temperance and intemperance, and that he did not really know what the temperance people had been working for, can not be tolerated. The President assured the temperance delegation that Griggs was an able lawyer, and a courageous man; but the statement that he was an "*honest man*"—what do our readers think of it?

This whole matter is ridiculous—it is a burning shame. It is an awful outrage and travesty on our good men and our good women. There are hundreds if not thousands with just as much ability, education, with just as much generalship, who have at least *some* fear of God in their hearts, and *some* sense of righteousness and justice. The educated, intelligent, Christian, temperate and temperance people of the United States outnumber the whisky element more than two to one. We can beat them in any contest that is at least *half* fair. Of course, we can not stoop to such tricks as the one I have outlined in my talk to day; but God is with us, and we are *more* than a match for the whole of them, even if Satan with all his angels masses his entire forces in with them just to keep up the beer and whisky traffic. By the way it rejoices my heart to see that Gen. Howard and Gen. Shafter do not recommend the army canteen. May God be praised that we have at least *two* great and good men who can not be humbugged or bulldozed or influenced in any manner by the rum power and the whisky interests.

If anybody thinks the army canteen is not quite so bad after all, let him read what Rambler says about Uncle Sam's army canteen away up on the Pacific coast in Oregon, page 358, 1899.

A KIND WORD FROM THE PRESIDENT OF THE OHIO WOMEN'S CHRISTIAN TEMPERANCE UNION.

Friend Root:—I have read with a great deal of interest and profit the department of "Our Homes." It is certainly encouraging to read such articles from the pens of Christian business men, whose word and experience go so much further with the mass of humanity than that of the professional reformer. Thanking you again for your kindness, I am

Sincerely yours, ANNIE W. CLARK,
[*Pres't O. W. C. T. U.*]

Columbus; O., Feb. 16.

What Dr. Miller says in a Straw, Dec. 15th No., about A. I. Root's showing up frauds doubtless mildly expresses a sentiment of many if not all of your readers. At our house friend Root's Home talks are always a most interesting part of GLEANINNS. While reading this latest one it is almost sad to observe what a struggle it costs Mr. Root to retain his good opinion of mankind; but are there not other reasons that prohibition laws do not always prohibit, besides the carelessness of the people in general and the wickedness and large means of the liquor-men in particular? A. GREVE.

Davenport, Iowa, Dec. 29.

HIGH PRESSURE GARDENING

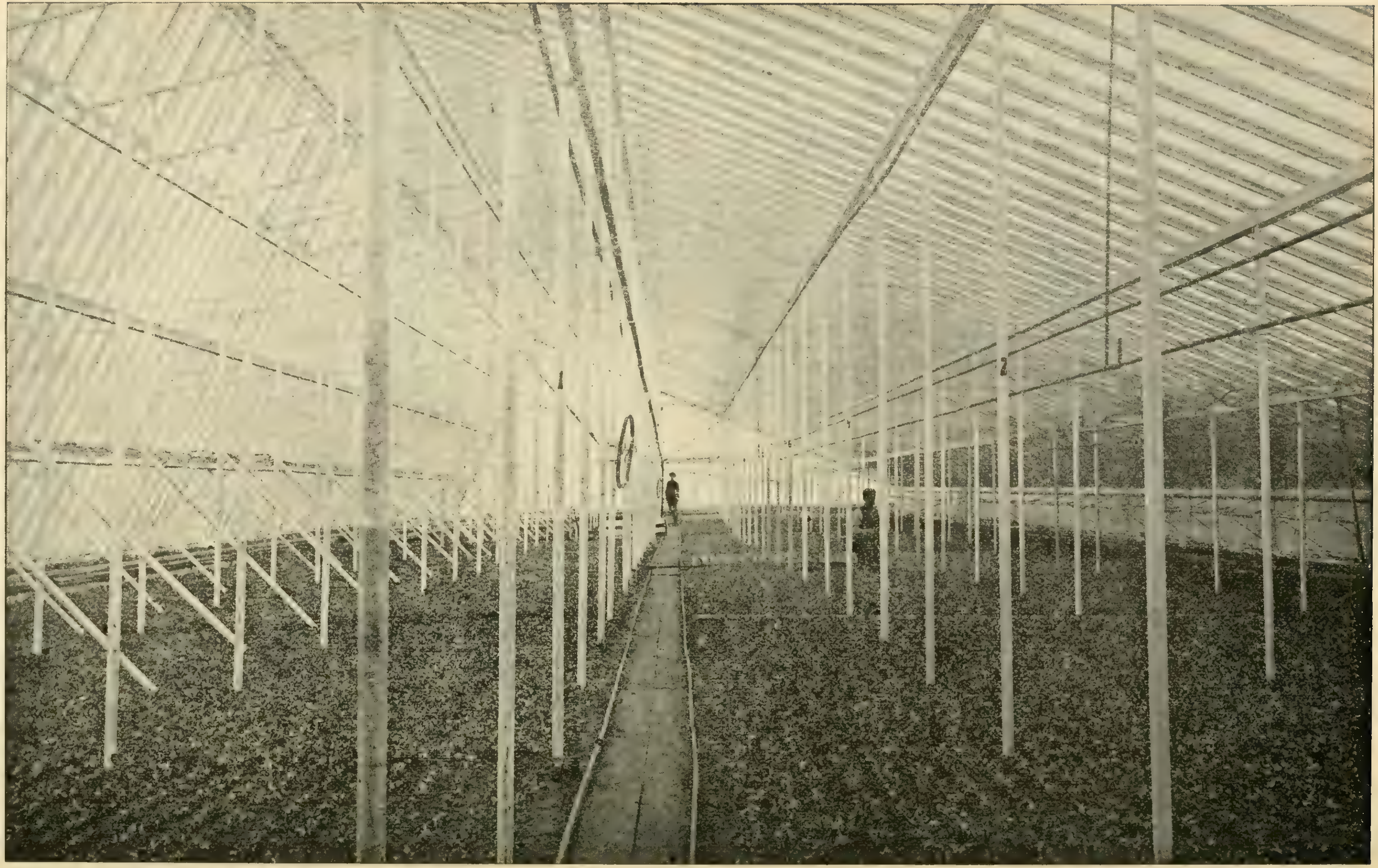
BY A. I. ROOT.

SOME SUGGESTIONS FOR A NEW STYLE OF GREENHOUSE FOR COLD CLIMATES.

Mr. Root:—I have read your description of how to build a greenhouse, with a good deal of interest; and I do not suppose you would object at all to a little friendly criticism of it, as no doubt a good many will be built after your plan; and, to my way of thinking, will not put their money to the best advantage. As with bees, location may have a good deal to do with it—in this case, caused by climate and sun elevation, so I speak only for my *section* or a like one.

1. As you say, light in the dark months, November, December, and January, is the great problem.
2. Next, saving of glass by oval shape, which is the second point in your plan.
3. Low down to escape wind.

I send you photo of our largest house, which, so far as I know, is the best that I have seen for lettuce, tomatoes, cucumbers, radish, etc. Put this photo alongside of your picture in GLEANINGS and do a little *hard thinking*. My boys deserve as much credit as myself in studying out the points in our ideal house. The first house I had was even span, north and south,



INSIDE VIEW OF THOMAS SLACK'S GREENHOUSE ESPECIALLY FOR GROWING GRAND RAPIDS LETTUCE.

20×30 ft., and some sash 20×20, arranged as by your "What to Do." The Rawsons, of Arlington, gave me the next big lift, getting me up off the ground with a house eventually 83×63, ¾ span, 19 ft. high at peak. A good deal of hard study evolved (among the lot of us) the inclosed; and if I were putting up an acre of house it would be on that principle.

The long side to the north. The south side averages at right angles to the sun, at noon in November, December, and January.

Answer to 1.—Here, north of 45°, in cold weather frost would keep the sun out of your house till it was nearly off the east end, and at almost all times it would be at a very acute angle, either endwise of the glass or sidewise toward noon, giving quite a dense shade I should think. The bottom sash along the front would give the best possible light (average); the top part would never give its best light till the sun had got so high toward spring that whitewash would probably be of as much use as more sun. A snowfall on a mild day would not slip off very well from the top part, and in cold drifting weather would freeze on and keep most of the light out for a week at a time. To scrape it off breaks too much glass.

Now, to take up the same points in the inclosed photo. The sun starts and finishes at nearly right angles to the ends, but doesn't shine very far down the house at any time. It shines at once on all the front, first at quite an acute angle, and gradually comes around to right angles at noon, and so on till acute, and at last nearly right angles to the west end. A pipe under each stringer (five pipes) runs the whole length of the house near the glass in front (the same on the back slope, but seldom used); assisted by the sun on the outside they very soon cut the frost and let the bright sun directly in. The house is 22 feet high on the front slope. This will allow *all the sun* that shines on 50 feet of ground in November, December, and January, to enter without casting any shade. Later on, as the sun rises higher it shines through the back slope more each day, at an acute angle, and at a sharper angle through the front. The result is, we get all the sun *possible when we most want it*, and in summer so little that we don't have to whitewash; and I never remember seeing the thermometer over 95° to 100°; back slope is 45 ft.

Answer 2.—Saving glass. Double-thick 20×20 glass for our house was only one-sixth of the total cost of house; and, while proportionately higher than yours, mostly owing to the high front, is much more than offset by extra ventilating facilities and extra sunlight obtained. As I write this afternoon, in the house after Rawson's pattern, with the thermometer outside 5° to 10° below zero, inside 59°, and nearly *all pipes* on, glass is a good deal frosted. Large house, no pipes on all day; back all frosted thick, front clean, with brigh sun shining in; thermometer 60°. It costs us too much to save glass by building low. If the beveled corners of your house are glass it would cost more to build than to make the whole thing square. With your command of skilled help it might be different.

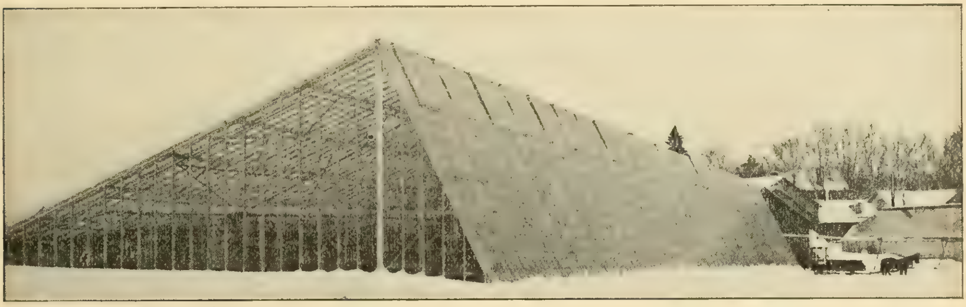
Answer 3.—Low down out of the wind, and sloping so that wind does not catch. Good! first rate; get it if you can without losing too much in some other direction. *I don't think you can.*

Sunken paths, glass in zinc strips, and glass butted together. I think this a delusion and a snare, and can give good reasons for so thinking. The large house is 50×200 inside; walks 24 inches wide up the middle. We plant right on the ground. East and west wind can not hit it much; north ditto; south catches it well; and don't you give this idea to any one without telling him to find out how we brace against it or he will get into trouble. A shutter 3 ft. wide the whole length of the back, opened by two leaves and 22 windows in the front, operated by two wheels, give perfect ventilation. I do not know of any other greenhouse built with short side to the south, but have heard of a small one. Our Montreal competitor, Mr. Legarre, who has watched this house for three years, made five or six visits on purpose, and told me if he ever built again he would build like it.

If you can pick any thing of use to brother-gardeners out of this, do it; if not, your waste-paper basket is large enough to hold it; at any rate, I feel I have paid my debts in that line. THOS. SLACK.

Waterloo, P. Q., Jan. 8.

Friend S., when I gave directions for making that little greenhouse I did not intend it should be a pattern for houses hundreds of feet long. I was only thinking of an amateur greenhouse for those who want it only for recreation or as a side issue. The house you have so kindly described and photographed is already in use to some extent among florists; but I believe it has not found general favor. Perhaps as far north as you are it may be the best arrangement. A good many may be deterred, by the expense of the glass, from carrying it up so high, but still it may be the very best arrangement for growing Grand Rapids lettuce.



GREENHOUSE FOR GROWING GRAND RAPIDS LETTUCE, SHORT SIDE FRONTING THE SOUTH; OWNED BY THOMAS SLACK, WATERLOO, QUEBEC.

GROWING GRAND RAPIDS LETTUCE IN A HOUSE SPECIALLY DESIGNED AND BUILT FOR THAT PURPOSE.

Growing Grand Rapids lettuce, like many other things, is a great deal easier to do it when you know how than it is to describe the various operations so that another can succeed as well as yourself. Every one will not go at the same piece of work in the same way, and yet may have equally good results. Our plan, after trying many, is as follows, and the requisites are:

1. A light house with good facilities for controlling ventilation, and temperature—40° to 45° at night, and 60° to 70° in the day time.
2. Good soil, either natural or made so by proper fertilizers, and sufficient sand to make what is called a good, quick soil. Ours was muck, a few inches deep, and the meanest kind of hardpan and stones. How brought to its present good condition is too long a story to tell.
3. The best seed that can be procured.
4. Good plants.
5. Proper and necessary precautions to keep down disease and insects.
6. Strict attention to business in hand.

Ans. 1. You have a photo and description of one of our greenhouses.

2. Make the best deep mellow rich soil you can.

3. Grow your own seed if possible; if not, get from some reliable seedsman; *and don't trust him*, for, with the best of intentions, he may be deceived in the seed he buys, or some mistake may be made by some of the clerks. Never trust your crop to untried seeds. Buy sufficient to have a year's supply on hand, and try a little. If it proves true to name, and a good strain, go ahead; and always keep a good supply of tested seed on hand, so that you never have to sow a seed for crop that you do not know positively is all right. We are carrying, at present, 7 lbs., and always mean to have 5 on hand. We speak very feelingly on the subject, as we got caught once by having $1.00 worth of Black-seeded Simpson, with a sprinkling of Grand Rapids seed in it, sent us instead of Grand Rapids, as ordered. The consequence was, that we had to stand a loss of nearly $300, and were exceedingly fortunate at that. As $1.00 worth of seed will grow a crop that will sometimes sell for $2000, a man is simply reckless who takes any risk he can avoid.

4. I wonder if you know just how good a thing you gave to the public in your "What to Do" when you described the Utica lath tomato-box. It is the backbone, not only of our plant business, vegetables, and annuals, that we sell in the spring, but we use them for all our lettuce, celery, and cabbage plants, etc., for our own business. We use about 3000 of them every year, some of them many times. Many would think them too fussy and notional, to use because *they do not know how to use them*.

All our potting earth (rotted sods, mushroom manure, and washed lake sand) is got ready and put in in the summer after shoveling through a one-inch screen. When wanted for use in winter it is shoveled into a sieve having half-inch mesh, hanging from the roof. The boxes are filled from this, and put, 200 at a time, into a box lined with galvanized iron, and steamed two hours. Whatever may happen afterward, the lettuce sown in these boxes starts free from disease and insects of any kind, which is quite important, and it is a pleasure to see benches full of boxes or pots, and not a single weed growing in them. Time saved in weeding is as much as time required in steaming. Eight benches stand at the end of one house, each 6×26 ft., made of cement, with sides three inches deep. In these the boxes are placed, and can all be watered perfectly by flooding the bench. Seedling lettuce, when large enough, are transplanted 32 into a box, and left till large enough to be transplanted into the ground as required. 6×6 inches. Boards a little smaller than the inside of the box, with wire nails driven through them, are used to space the plants correctly, saving a good deal of time and giving each plant its exact space.

Now, having plants all nicely grown in these boxes, to just dig them out as every one I have seen, outside of our own people, does, simply throws away one of the great advantages of the box; i. e., having your plants with roots almost undisturbed, and a lot of earth with them.

Pick the box up, and bump first one end and then the other on the ground; this loosens up the whole mass of earth. Stand the box on end; place the flat open hand over the top end of the box, and tip half of the earth and plants out into your hand. You can now break each plant with the earth that belongs with it, and disturb it very little; the other half of the box can be done in the same way. A little practice is required to do a nice job quickly. A large box can not be worked in this way.

5. Sulphur and lime or whiting, a part of the steam-pipes painted once a week with the above, thinned to the proper consistency with water, and the temperature 40° to 45° at night, and 60° to 70° in the daytime, insures us against mildew; letting the temperature run too high at night will almost certainly bring trouble. Tobacco-stems put through a hay-cutter, scattered freely on the ground, and a quantity burned each week, settles the question of green aphis.

6. There is no royal road to lettuce-growing. If you do not know your business, and attend to it, you will feel it in your pocketbook sooner or later.

Waterloo, P. Q. Thos. Slack.

I am greatly pleased to know that you have found that little plant-box a good thing; and your arrangement for killing both insects and weed seeds by steam heat is exactly what I wanted to know about. In fact, it gives me new enthusiasm in greenhouse work to read your description. I have just had a lot of these little boxes made, and find them exceedingly handy for seedling coleus and salvia plants when they are put in thumb pots or even two-inch pots. A dozen pots or more can be carried anywhere in one hand. Let any florist show his customers a box of a dozen seedling coleus-plants, like some we have now, and I am sure they would sell quickly for half a dollar. That would be less than five cents each plant, pot and all.

Let me explain again to our readers that a single lath, costing but little more than a quarter of a cent, will make the entire box all but the ends. Take a four-foot lath, cut it into four equal pieces, then with a thin buzz-saw split each piece edgewise. Now get some ends of half-inch lumber, 3 inches wide and 6 long, and you will be ready to nail up the boxes. It was originally intended to hold a dozen tomato-plants; but all kinds of vegetable-plants can be grown and sold in these boxes. Our Ohio Experiment Station folks have used and recommended similar boxes for years in connection with sub-irrigation in the greenhouse. The boxes of plants are placed in a water-tight bench such as has been described, then water is let in until the ground in each box is properly soaked from below without letting any water touch the leaves of the plant at all, where for any reason it is not deemed advisable.

A BOX FOR STARTING CUTTINGS TO BE USED IN A WINDOW.

So many are asking about my forcing-bed, and whether a similar one could be used for house-plants, I will explain briefly. For forcing cuttings, we must not only have a high temperature, say between 70 and 80, but we want the air confined by a pane of glass right over the cuttings, so as to hold in the dampness. The air must be moist, and the soil warm. Get a pane of glass any size, the larger the better, because you can then have more plants. Find a box to fit it, or make one if necessary. Better have the glass framed and hung on hinges over the box like the cover of a trunk; then it will be so much handier to open and close. Inside of the box put a pan or earthen dish to hold the moist sand or jadoo fiber, or, if you choose, a mixture of both. A deep saucer or sauce-dish will answer, but round dishes waste room. I use square deep sauce-dishes. Put in your cutting or slips so that just one or two leaves are out of the wet soil. Raise up your dishes until they are close to the pane of glass. Now your heat should be applied at the bottom. A small lamp may be used. You want the air inside of the box warmer than the air in the room. This will keep moisture standing on the under side of the glass. The cuttings will bear a temperature a great deal lower than 70°; and even if it sometimes runs up to 90, no harm is done. If it gets too low, of course they do not make as much progress. When the weather is *very* damp they will need ventilation or they may mold or rot. You will learn to manage this by practice. When the plants get up so as to touch the glass, lower the saucers.

As an illustration of what such an apparatus will do, yesterday a friend sent me some cuttings in a letter by mail. They were so much dried up I had hardly any hope that any of them would live. But I put them in one of my saucers, and forgot all about them. This morning, before it was quite daylight, I looked through the glass, and saw a new plant I had never seen before. At first I thought somebody had placed it there to give me a surprise; and then I remembered my wilted dried-up cutting. It had risen up during the night, spread out its branches, and there was a beautiful little plant two or three inches high, apparently in full vigor. All the rest of the cuttings had revived more or less, and I think all will grow. It seems almost miraculous that such things can be so quickly restored to life and vigor.

SPECIAL NOTICES BY BUSINESS MANAGER

CATALOG FOR 1900.

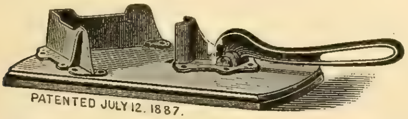
We have printed, made up, and either mailed or shipped to our dealers, a total of 90,000 catalogs during the month of February. Before we reach the end of our list we will print about 50,000 more, most of which we hope to get off during the next two weeks. After the first of April we begin work on another edition of the A B C of Bee Culture, as the last edition of 5000, completed last October, bids fair to be all sold before we can get another finished this summer.

CHOICE EXTRACTED HONEY.

We are sold out of comb honey, but we still have some 60 cases of Utah extracted honey in 60-lb. cans which is very fine, and we should be pleased to hear from any who are in need of such honey to supply their trade. It is some time yet before new honey will be on the market, and in the mean time we desire to dispose of present stock. If interested, write for sample, naming quantity you can use.

BUSINESS AT THIS DATE.

☞ While we are not crowded with orders as we were one and two years ago at this time we nevertheless have enough to keep us comfortably busy, and we have shipped five more carloads than we had shipped up to the same date a year ago. We have orders in sight pretty well filled, and are ready to furnish goods in large or small lots on short notice. When you decide what you need, let us show you how promptly we can supply it.


PATENTED JULY 12. 1887.

WAKEMAN AND CROCKER SECTION-PRESS.

This is a tool for folding or driving together either the one-piece or four-piece dovetailed sections, and was quite prominent years ago, selling for $2.50 each. We have a few of them on hand which we shall be pleased to furnish to those who can use them at $1.50 each, shipped with other goods.

MASON FRUIT-JARS ADVANCED.

Since printing and distributing most of our catalogs for this year we have received new prices on Mason fruit-jars just issued by the manufacturers, which are $1.25 to $1.75 per gross more than we paid a year ago. There appears to be a combination among the factories making jars, which has brought about the new prices. We still have quite a little stock of pints and quarts, but the half-gallon size is exhausted, and we can not buy new stock and sell at prices in our catalog, but will have to ask an advance of 75 cents per gross on pints and quarts, and $1.50 per gross advance on 2-quart. The new table of prices will be as follows:

Pint Mason jars,	55c doz.;	6 doz., $3.20;	12 doz., $6.00.
Quart "	58c "	" 3.35;	" 6.25
½-gal. "	80c "	" 4.40;	" 8.50.

These are all packed one dozen in a case, and have aluminum caps. There is likely to be an advance in No 25 jars and tumblers before long. We still have a good stock, but manufacturers are asking higher prices.

Special Notices by A. I. Root.

JADOO FIBER, PRICES OF, ETC.

This fiber comes from the manufactory in sacks holding about 125 lbs. each, and the price is 2 cts. per lb. In smaller lots than a 125-lb. bag, the price is considerable more; and the manufacturers object to our selling it to our friends at less than their advertised prices. We are at liberty, however, to do this: To every one who sends us $1.00 for GLEANINGS we will send him 20 lbs. ($1.00 worth at price charged for small quantities) of jadoo free of charge. This amount is heavy enough to make a freight shipment; and if it can be sent with other goods, that will make the expense still less. You will readily see that no one can afford to pay *postage* or *express charges* on an article that costs only 2 cts. per lb. Of course, we send a small sample by mail free of charge, but this is intended only for a test. If you have already paid for GLEANINGS, pay in advance for another year, get a subscriber somewhere, or make somebody a present of a year's subscription. This will be really your cheapest way to get the jadoo, for the manufacturers charge $1.10 for a 25-lb. box of the material. If you do not think you want 20 lbs., get your neighbors to club together with you. I think you can use 25 lbs. very quickly; and after you have tried it a little, I am sure you and your neighbors together can use a sack.

A special rate to florists on application.

For greenhouse work we rub the material through a coarse sieve. This sifting process works better when the jadoo is pretty dry; then with the same sieve mix it thoroughly with more or less sand or rich garden soil as you choose.

A NEW BOOK ON GREENHOUSE MANAGEMENT.

Ever since Prof. Taft, of the Michigan Agricultural College, put out his book on greenhouse construction, he has been considered authority; and when the O. Judd Co. gave notice that he was at work on a book entitled "Greenhouse Arrangement," I knew we should have something strictly up to date. The book covers the whole ground of fruits, flowers, and vegetables under glass; and the best part of it is that Prof. Taft has visited the most skillful growers in each line of work, and has given us beautiful half-tones of the contents of their greenhouses. The paper and print are just fine. The book contains 400 pages, and is "chockful" of beautiful half-tone illustrations. By the way, these half-tones are worth ever so much more to me than ideal pictures. Years ago, when I got a glimpse of Eugene Davis' greenhouse, full of Grand Rapids lettuce, what I saw in one minute by the light of a lantern was worth to me a hundred dollars or more, because it demonstrated at once what was possible to be done with that plant inside of a greenhouse. Well, this book of Prof. Taft's tells you dozens of times, by its half-tone pictures, what is possible in the way of a crop or what is possible with ornamental flowers or decorations. I said to myself again and again, "Oh! is it possible the little plant I have in my greenhouse may produce such a wonderful sight as I see in this half-tone picture."

Speaking of Grand Rapids lettuce reminds me that there is a whole chapter devoted to lettuce-growing under glass. It discusses growing in pots instead of beds; tells us what has been accomplished in the way of pushing the crop by means of electric lights, etc. The chapter on growing cuttings from different sorts of plants was especially helpful to me, as was also the one on insect-enemies in the greenhouse, and the preparing of pot soil and using fertilizers, both animal and chemical. Growing strawberries and other fruits under glass receives considerable attention.

The price of the book is $1.50; but we have an arrangements o we can furnish it together with GLEANINGS for only $1.75. If you have already paid for GLEANINGS we will mail you the book for $1.25. To one who is an enthusiast in growing stuff under glass, the book ought to be worth a dollar *just to look at the pictures.*

Wants and Exchange.

Notices will be inserted under this head at one-half our usual rates. You must SAY you want your ad. in this department, or we will not be responsible for any error. You can have the notice as many lines as you please; but all over ten lines will cost you according to our regular rates. We cannot be responsible for dissatisfaction arising from these "swaps."

WANTED.—To exchange modern guns (breech-loading) for old flint lock guns and fine-type muzzle-loaders, and old-style 8 day clocks with moon and date. W. S. AMMON, 216, 218 Court St., Reading, Pa

WANTED.—A young man with small family, who understands bee-keeping. Must be of good character. Good place for the right man.
S. M. ALEXANDER, Kearney, Neb.

WANTED—By active young man of 20, strictly temperate, work by the month; had some experience with bees. CHAS. L. MANLEY, Yale, Mich.

WANTED—To exchange, 125 Falcon surplus cases and 2 Daisy foundation-fasteners, for maple sap evaporator or sap-buckets, or 32 repeating rifle.
HARRY BEAVER, West Groton, N. Y.

WANTED—To exchange, 2 nearly full-blooded, 20 months old, partly broken beagle hounds, valued at $5.00 each, or both $9.00, for a portable forge and fixtures, or offers. GARDINER L. ELLIS, Millsboro, Del.

WANTED—To exchange, an Aspinwall two-horse potato-planter, as good as new, for bees, honey, or supplies; or would sell cheap.
ED. WILKINSON, Wilton, Wis.

WANTED—To buy good second-hand modern bee-keepers' supplies. Give full description and price f. o. b. C. L. MICHAEL, Upton, W. Va.

WANTED—A man with a family to work on a farm and to take care of stock; one handy with tools, and to help in bees. DAVID H. COGGSHALL,
West Groton, N. Y.

WANTED—Position to work in apiary, in any locality. B. W. WELTMER,
Pleasant Home, Wayne Co., Ohio.

WANTED—Second-hand 5-horse engine; in cash, trade, or monthly payments.
G. ROUTZAHN, Menallen, Pa.

WANTED—To exchange, a good 44-caliber Remington pistol, with reloading-tools, belt, and whole outfit, which cost $24, for wheel or beeswax. Also a full-bred fox-terrier pup from mother that won first prizes, for wheel or any thing useful.
A. P. BENDER, Rutherford, N. J.

WANTED—To exchange for lumber or Danz. hives or offers, one planer, one automatic V-groove section-machine; one dovetailing machine; one saw-table, cut-off and rip combined. E. N. FURAY, Forgy, O.

WANTED—A position with some bee-keeper by a young man. Write for terms and references.
W. A. DUNLAP, Dunlap, N. C.

WANTED—To exchange, 4×5 Kodak, Singer sewing-machine, and bicycles, for Barnes or Union saws, emery grinders, etc. ROBERT B. GEDYE, LaSalle, Ill.

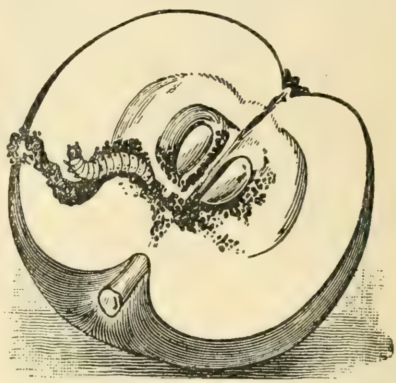
WANTED—To exchange, dried specimens of *Apis dorsata* and other wild bees for specimens of American wild bees and wasps, especially live queen humble-bees. F. W. C. SLADEN
(known to The A. I. Root Co.),
Ripple Court, near Dover, England.

WANTED—To exchange for honey or offers: One dovetailing machine, one drum sander, one sticker, one cutter-head for cutting entrances in sections, one planer, 24-inch, double cylinder; all in good condition. Address WM. H. BRIGHT, Mazeppa, Minn.

Sharpless Cream Separators—Profitable Dairying.

SPRAYING FRUIT-TREES.

The question of spraying fruit-trees to prevent the depredations of insect pests and fungus diseases is no longer an experiment but a necessity.



Our readers will do well to write Wm. Stahl, Quincy, Ill., and get his catalog describing twenty-one styles of spraying outfits and full treatise on spraying the different fruit and vegetable crops, which contains much valuable information, and may be had for the asking.

BEES AND QUEENS.

Either Golden Italian, 3-banded Italians, or Holy Lands, your choice. Nothing but the best of stock bred in 3 different yards, several miles apart. Send for circular and price list. It gives methods of queen-rearing, honey production, etc. Prices, either race: Untested, March, April, and May, $1.00 each; 6 for $5.00, per dozen, $9.00. Tested, $1.50; 6 for $8.00; per doz., $15.00 Untested, June, July, Aug., and Sept., 75c; 6 for $4.25; per doz., $8.00. Tested, $1.25; 6 for $6.75; per doz., $12.00. Special discount in large quantities. Breeding queens a specialty
O. P. HYDE & SON, Hutto, Texas.

REMOVED!

EARLY QUEENS. W. H. Laws has removed his entire queen-rearing apiaries to Round Rock, Texas, where he will be better fitted than ever to fill orders for the LAWS strain of FAULTLESS 5-BANDED bees the coming season. BREEDING QUEENS always on hand. Price $2.50 each. I am also breeding the leather-colored stock from imported mothers. Tested queens, either strain, $1.00. 6 for $5.00; untested, 75c; 6 for $4.00. Queens ready in season.
W. H. LAWS, Round Rock, Texas.

Olive Oil. This oil is of fine quality, and guaranteed absolutely pure; try it. Extracted by myself. Case of 2 doz. bottles—2 gals.—$10.00; case of 1 doz. bottles—2 gals.—$9.50; case of two 1-gal. cans, $8.50. All f. o. b. here. Sample on application, 15c. **A. B GURR, Merced, Cal.**

WE HAVE A PLAN for supplying religious literature at a cost of only 25 cts. for $1 worth. Drop us a card for full particulars.
PICKETT PUB CO., 307 W. Jefferson, Louisville, Ky.

QUEENS **THAT EXCEL** are the kind you **want,** the kind I rear. I am booking orders for them now. A fine lot of tested, select tested, and breeding queens on hand. They were reared under most favorable **conditions** from selected cells; only the **best** virgins were used. These select tested and breeding queens are the **cream** of the lot. A postal now will bring my catalog, when issued, with full particulars and prices.
J. B. CASE, Port Orange, Fla.

Extracted Honey.

Some complaint has been made in the past that the REVIEW paid more attention to comb-honey production than to that of extracted. No such complaint can be fairly made this year. The January issue opened up with a five-page illustrated article from Miss Pickard, of Wisconsin, that has brought praises and calls for "more," from Maine to California. The February issue has an article from Herbert Clute, who was brought up in the bee business by that old veteran Frank McNay, and who, during the five years that he has been in business for himself, has produced about 75,000 pounds of extracted honey, and built him up a nice apiary, honey-house, and wintering-cellar, all of which are illustrated and described. The March number has an article from Harry Lathrop on the production of extracted honey with eight-frame Langstroth hives, while C. Davenport, of Minnesota, gives nearly three pages to the production and treatment of extracted honey, bringing out several helpful hints. Next in order will come a well-illustrated article from that king of Wisconsin bee-keepers, N. E. France, giving the methods followed in producing those large crops of extracted honey for which he and his father have become famous.

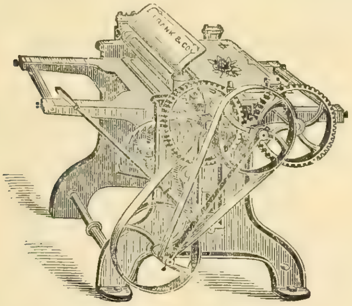
If you produce extracted honey you ought to have the REVIEW for this year, from the beginning. Send $1.00 for the REVIEW for 1900, and I will send 12 back numbers free of charge. Send $2.00 and I will send the REVIEW for 1900, the 12 back numbers, and one of those Superior Stock Queens next spring.

W. Z. HUTCHINSON, Flint, Mich.

DO YOU WANT TO MAKE SOME MONEY?

OUR PRIZE-WINNING White Leghorns, Barred and Buff Plymouth Rocks, Buff Cochins are money-makers. Utility and fancy combined. Friends, they will help to lift that mortgage. One thousand fine birds for sale at reasonable prices. Satisfaction guaranteed. Catalog free.

CRESCENT FARM, : BOX W, KENT, OHIO.
E. T. BLOOD, MANAGER.



PLANERS

The above cut shows one of our small Planers, of which we make twelve different styles and sizes.
Also large Planers, Band Saws, Buzz Planers, Moulders, Wood Lathes, and all kinds of

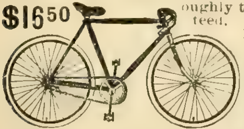
WOOD WORKING MACHINERY

Send for Catalogue.

The FRANK MACHINERY CO.
BUFFALO, N. Y.

We Defy the World

to produce as good a wheel as the Arlington & Oakwood. Strictly high-grade, quality, material and construction unsurpassed. A marvel of beauty and strength, thoroughly tested and fully guaranteed. Shipped anywhere at lowest wholesale prices Money refunded if not as represented No money in advance.



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$35	"Arlington'	$16.50
$40	"Arlington"	$18.50
$50	"Oakwood"	$21.50

We belong to no trust or combine—employ no agents. You pay but one small profit—and our enormous cash sales enable us to give the best value ever offered. Illustrated Catalogue Free. **CASH BUYERS' UNION, 162 W. Van Buren St., B-345, Chicago, Ills.**

PRICE OF
Lone Star Queens
AFTER APRIL 1ST.

1 tested queen.......	$ 1 50
3 tested queens.....	3.75
6 tested queens	6 50
12 tested queens ...	11.50
1 untested queen...	.75
3 untested queen...	2.00
6 untested queens.	4 00
12 untested queens	7.00

Five per cent discount from these prices after July 1st to Sept. 1st. Extra fine five-banded queens for breeding purposes, from May to September, $5.00 each. Golden or five-banded queens at same price—select tested, either race, $2.50. Our queens are reared from cells built in full colonies. Satisfaction guaranteed. Our bees are all bred for business, and we can furnish either three or five banded. Take your choice. Dark or leather colored from imported mothers.

Mr. G. F. Davidson & Sons:—I want to express my pleasure and satisfaction with the bees which I bought from you. The bees are the finest in color which I have seen in this State, being a bright golden color—so much so that, when the young bees are taking their flight in the sun, they present a rare spectacle of beauty to the practiced apiarist's eye. But aside from their beauty they are the best rustlers I have in my apiary, getting out earlier in the morning, and working a stronger force in proportion to colony. I want to thank you for the prompt and honorable treatment you have accorded me. A. W. BISHOP,
Sterling, Kan., May 22. Ex-Pres. Kan. S. B. K. A.

G. F. DAVIDSON, FAIRVIEW, WILSON CO., TEX.

FRUIT PACKAGES OF ALL KINDS.

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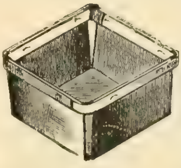


Bee-keepers' Supplies.

We allow a Liberal Discount on early orders. Why not send for your supplies now to save the discount and avoid the rush of the busy season? Catalog and price list free. Address

Berlin Fruitbox Co., Berlin Heights, Erie Co., O.

$2,500.00

in cash prizes is one of the many interesting features of our new catalogue for 1900. Planters of Maule's Seeds are successful people. **Maule's Seeds lead all;** have done so for years and are as far ahead as ever in the race. Our new catalogue for 1900 is

FREE to ALL

who apply for it. It contains everything good, old or new, with hundreds of illustrations, four colored plates and practical up-to-date cultural directions. It is pronounced the brightest and best seed book of the year. Write for it to-day. Address

WM. HENRY MAULE, Philadelphia.

In writing, mention Gleanings.

CHOICEST FRUIT

and **Ornamental Trees, Shrubs, Roses, Plants, Bulbs, Seeds.** Mail size postpaid. Larger by express or freight. Direct deal will save you money, try us. Elegant Catalog free. 46th year. 1000 acres. 44 greenhouses.

THE STORRS & HARRISON CO.,
Box 743, - Painesville, Ohio.

EVERITT'S EARLY 6 WEEKS MARKET POTATO

ARE SEEDS RELIABLE

never disappoints. Ready for use in 6 weeks. Ripens in 10 weeks. Has yielded **600 bushels per acre.** Don't confuse it with other so-called "early" varieties. Tubers large and keep well. 1 bu. $1.50; 1 lb 25c. Send for our catalogue **and offer of seeds Free.**

J. A. EVERITT, Seedsman, Dept. 414 Indianapolis, Ind.

REID'S Fruit Trees, Small Fruits, Roses, Ornamental Trees and Plants true to name. Low prices. No. 1 stock. Illustrated catalog free. **FRUITS**

REID'S NURSERIES,
Box 18, Upland, Ohio.

Mention this paper

EVERGREENS

Hardy Sorts, Nursery Grown. Millions to offer. **6 to 8 in $1; 12 in. $3; 2 to 3 ft. $10** per 100 prepaid: **4 to 6 ft. $20** per 100 **50 GREAT BARGAINS** to select from. Forest and Fruit Trees, Vines, etc. Send for free catalogue. **LOCAL AGENTS WANTED.**

D. HILL, Evergreen Specialist, **Dundee, Ill.**

In writing, mention Gleanings.

SEED SWEET POTATOES.

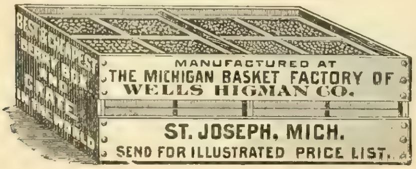
Select stock of the best of the old and new varieties. Descriptive circular and price list sent free. Refer by permission to The A. I. Root Company. Address

L. H. Mahan, Box 143, Terre Haute, Ind.

GINSENG WE ARE HEADQUARTERS FOR **Seed & Plants**

All the latest instructions about it; its value; what used for and how to grow it. This valuable information FREE for a stamp.

AMERICAN GINSENG GARDENS, ROSE HILL, New York.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THE MICHIGAN BASKET FACTORY OF
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SEND FOR ILLUSTRATED PRICE LIST.

SEED DUE BILL FREE

To get new customers to test my **Seeds,** I will mail my **1900 Catalogue,** filled with more bargains than ever and a **10c Due Bill** good for **10c worth of Seeds** for trial **absolutely free.** All the **Best Seeds, Bulbs, Plants, Roses, Farm Seeds, Potatoes, etc.,** at lowest prices. **Nine Great Novelties** offered without names. I will pay **$50. FOR A NAME** for each. Many other novelties offered, including **Ginseng,** the great money making plant. Over 20 varieties shown in colors. **$1100 in cash premiums offered.** Don't give your order until you see this new catalogue. **You'll be surprised** at my bargain offers. Send your name on a postal for catalogue to-day. **It is FREE to all.** Tell your friends to send too.

F. B. MILLS, Box 105 Rosehill, Onondaga Co., N. Y.

50c. SEED DUE BILL FREE

Send me today, your name and address, on a postal and I will mail you **free,** my Handsome Illustrated Seed Catalogue containing **Due Bill** and plan **good for 50c. worth of Flower or Vegetable Seeds Free.** Your selection, to introduce the

Best Northern Grown Seeds,

DIRECT FROM GROWER TO PLANTER,

from Saginaw Valley Seed Gardens. Seed Potatoes, Vegetable, Flower, Field Seeds and Plants.

100,000 Packages Seeds FREE

on above plan. Write quick. Send names of your neighbors who buy seeds. $100 cash for best list. See catalogue.

HARRY N. HAMMOND,
Seedsman, *Box* 69. ***Fifield, Mich.***

SPECIAL OFFER.

We want every fruit-grower to get acquainted with the best horticultural paper in the country, and make this unequaled offer: For only $1.00 we will send to any part of the United States, charges all prepaid, The Strawberry Culturist one year, 6 New York, 25 Excelsior, 25 Johnson's Early, 25 Sample, 25 Nick Ohmer strawberry-plants — a fine collection. We guarantee these plants true to name, and reach you in first-class condition. Send now, don't wait.

The Strawberry Culturist,
Box R, Salisbury, Md.

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BARGAINS IN SEEDS!

Choice kinds of Vegetable and Flower Seeds **at 2c. per packet.** Flower Plants, 5c. each. Many choice novelties. Don't buy until you have seen our **new catalogue. Mailed FREE** if you mention this paper.

IOWA SEED CO., DES MOINES, IOWA.

STRAWBERRIES—90 Varieties. Including new **Gladstone, Pennell, Senator Dunlap, Twilight, Livingstone, Emperor, Empress, Rough Rider, W. J. Bryan.** All standard, well-rooted plants. Don't miss our plant collection offers. **FLANSBURGH & PEIRSON, LESLIE, MICH.**

POTATOES. **Early Snowball** and twenty other leading varieties. ***Catalogue Free.***

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White as Snow

A New Early Ohio.

Here's a new potato with every quality to make it the most popular ever grown—**Vaughan's White Ohio.** Has every good feature of the old Ohio, and besides is **pure white** in color. Grown from Northern seed; early and prolific. A money maker for the grower **Get it now before everyone else grows it.** Fully described in our 1900 Seed Annual.

PRICE—per lb. 30 cents, prepaid; peck, 75 cents; bushel, $2.

SEEDS FREE! We want the names of live, active market gardeners. Send us two names and we will mail **FREE** one pkt Globe Radish and one of Iceberg Lettuce, together with our Annual for 1900, a complete mirror of American Horticulture. Tells the whole story of the garden, lawn and farm.

Vaughan's Seed Store,

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FERRY'S SEEDS

Thousands of gardeners depend on Ferry's Seeds every year and never suffer disappointment. Cheap substitutes bring loss, not paying crops. It pays to pay a little more for FERRY'S SEEDS. Five cents per paper everywhere, and always worth it. **Always the Best. 1900 Seed Annual free.**

D. M. FERRY & CO., DETROIT, MICH.

3 Pkts. Standard Vegetable, or Pkts. Choice Flower Seeds, and our Annual Seed Book for **6c**

Our handsomely illustrated annual contains a hundred money-saving ***SPECIAL OFFERS*** which you can't afford to miss—**New Corn, New Oats, New Potatoes.** Mention this paper and get our **SEED BOOK FREE.**

W. W. BARNARD & CO., 161-63 E. Kinzie St., Chicago.

MONEY IN MELONS

BUCKBEE'S

NEW STRAWBERRY MELON

which created such favorable comment last season was hybridized with the strawberry, the result being the **most delicious strawberry flavor.** Hardy, good market size, excellent shipper. It will please everybody that grows it and all who eat it.

WRITE TO-DAY and we will send you a liberal package of this wonderful melon seed and our **large beautifully illustrated Seed and Plant Book.** Tells all about best varieties of melons, how to grow for profit, etc. **Write today** and mention this paper.

FREE

MENTION THIS PAPER.

H. W. BUCKBEE
ROCKFORD SEED FARMS.
ROCKFORD, ILL. BOX 614

In writing, mention Gleanings.

You need no other seed catalogue if you have

Burpee's for 1900

While not the largest, it is the brightest and best. It is a book of 140 pages, carefully written among the growing crops at *Fordhook Farms,*— the largest trial grounds in America. We cannot afford to waste copies to those who want only the "pretty pictures," but shall be pleased to send it *FREE to all* who intend to plant seeds in 1900. *Write TO-DAY!*

W. ATLEE BURPEE & CO.

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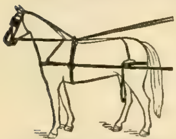

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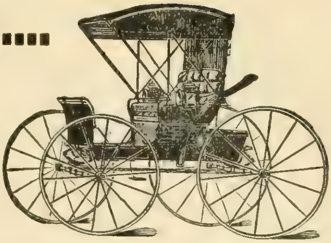

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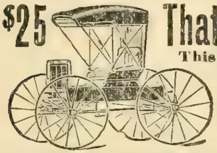

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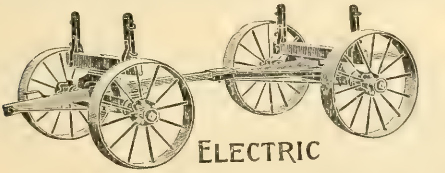

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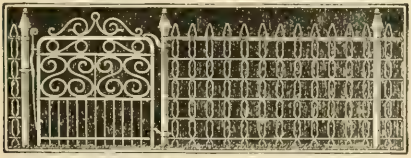

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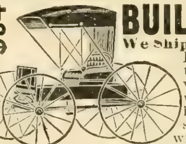

We Ship Direct to the consumer at **Lowest Wholesale Prices** the most reliable line of vehicles, etc. to be found anywhere. Built substantially of honest material—workmanship the best—one of them will outlast two of the ordinary kind. **Guaranteed** as represented or your money back. We will ship C.O.D. with privilege of examination. You risk nothing. Reliable Top Buggy, **$34.00;** fine spring Wagon, **$39.00;** strong two horse Farm Wagon, **$44.00;** handsome Surrey, **$54.00;** well made Portland Cutter, **$17.25;** Carts, **$9.50** up. Single harness **$4.50;** Farm harness, **$12.95.** Send for free illustrated catalogue.

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FOR FARM AND GARDEN.

Your weight does the work. One of the greatest labor-saving inventions of the age. **The easiest running tool ever made.** Drag bars are hinged so that hoes work in and out close to plants.

NO AFTER-HOEING REQUIRED.

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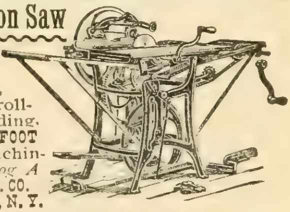

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GOOD FENCE!

Makes good neighbors. Why not have both when you can make the best for

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A little inquiry into the merits of our system of fencing will repay you handsomely. Write to-day for free Catalog

KITSELMAN BROTHERS, D
Box 51 Ridgeville, Indiana, U. S. A.

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KIND WORDS FROM OUR CUSTOMERS.

UNSOLICITED TESTIMONIAL.

I am not an agent of sewing-machines, but handle a dozen or so each year among the people; but I have not handled any thing equal to your machine for the money, and I have tried half a dozen or more makes.
Mercersburg, Pa., Feb. 5. DR. MARTIN.

A SIMPLE LITTLE STORY WITH VERY WHOLESOME MORALS ATTACHED TO IT.

For three seasons it was my misfortune to have for hired help young men who were inveterate tobacco-users. They were good men to work, but were dull and lacked interest—wanted to be running around nights, spending their Sundays wherever wickedness was going on, coming home at any time of night, chewing tobacco while in bed, and spitting on the walls of their bedroom. In fact, it was a filthy job to clean out the bedroom, and the walls had to be repapered two different times in three years, and they started out with a clean room and new paper. Well, after submitting to that thing I put an advertisement in GLEANINGS something like this: "Wanted, a young man to work on a small farm in connection with bees. Any one using tobacco, or wanting to go to dances nights, or who rather be hunting or fishing on Sunday than to be attending meeting or Sunday-school, need not apply." Well, in a very short time I got an answer from Mr. O. D. Adams, from Indiana, and it had the right ring to it. I told him to come on. He stayed the whole season through until my fall work was done. He was intelligent, capable, interested in the work, entirely trustworthy, a Christian gentleman in every thing. What a contrast! Now every one of the other men, with the same Christian principles, and without the tobacco, would have been just as good men as Mr. Adams was, and enjoyed life a great deal better than they did. Altogether I received nine applications for the place from four or five different States, and all of them had the right ring. So much for one ad't in GLEANINGS H. S. WHEELER.
Mt. Pleasant, Mich.

WANTED.—Your honey. We will buy it, no matter where you are. Address, giving description and price.
THOS. C. STANLEY & SON, Fairfield, Ill.

For Sale.—2¼-horse-power steam-engine and 4-horse-power boiler.
E. H. GRAY, Southport, Fairfield Co., Conn.

SINGLE-COMB BLACK MINORCAS.
Eggs 75c per 13. ADOLPH SEGERLIN, Anita, Pa.

SEED POTATOES! **EARLY OHIO**—Fine, smooth, strong seed of good size, in any quantity. Write for prices. Also Pure-bred Sherwoods. Cocks and cockerels for sale. Eggs for hatching in season. Ask for what you want.
A. V. TOBIAS, Covington, Ohio.

WESTERN BEE-KEEPERS

will save money and freights by buying supplies from

BARTELDES & CO., Denver, Colo.

20-page illustrated price list now ready.

Root's Goods for California.

We have just received a large carload of sections, extractors, smokers, veils, etc., direct from the factory, and are prepared to supply bee-keepers with the same promptly. Do not send a long distance and pay high freights. Write for our prices.
M. R. MADARY, - Fresno, California

D. COOLEY,
Dealer in **BEE-KEEPERS' SUPPLIES,**
KENDALL, MICH.
Root's Goods at Root's Prices. Catalog free.

You Can Buy
Groceries and
Bee-Supplies
at Wholesale Prices
by ordering in wholesale quantities of VICKERY BROS., Evansville, Ind.

They carry an immense stock of sugar, coffee, teas, canned goods, soap, candles, provisions, flour, oil, garden and field seeds, nails, fence-wire, wooden and willow ware, grocers' sundries, bee-hives, sections, foundation, comb, and general bee-keepers' supplies; buy and sell honey and beeswax.

ADDRESS
Vickery Bros., Evansville, Ind.
OPPOSITE POSTOFFICE.

DITTMER'S FOUNDATION!
AT WHOLESALE AND RETAIL.

This foundation is made by an absolutely non-dipping process, thereby producing a perfectly clear and pliable foundation that retains the odor and color of beeswax, and is free from dirt. Working wax into foundation for cash, a specialty. Beeswax wanted. A full line of supplies at the very lowest prices, and in any quantity. Best quality and prompt shipment. Send for large illustrated catalog.

GUS DITTMER, : : : AUGUSTA, WIS.

BEE-SUPPLIES!
We are so situated that we can furnish any western bee-keeper with as good goods, for less money, than he can get elsewhere. Send for our new catalog.
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114-116 N. Kansas Avenue, Topeka, Kansas.

Root's Goods in Kansas.

Carl F. Buck, Augusta, Butler County, Kansas.

ROOT'S : BEE : SUPPLIES
for Maryland, Delaware, Virginia.
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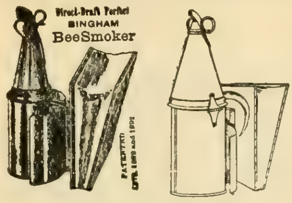


BINGHAM SMOKER.

BINGHAM & H..THERINGTON
UNCAPPING-KNIFE.

MADE TO ORDER.

Bingham Brass Smokers

Made of sheet brass, which does not rust or burn out; should last a lifetime. You need one, but they cost 25 cts. more than tin of the same size. The little open cut shows our brass hinge put on the three larger sizes. No wonder Bingham's 4-inch smoke-engine goes without puffing, and does not drop inky drops. The perforated steel fire-grate has 381 holes to air the fuel and support the fire.

Heavy tin smoke engine, 4-inch stove per mail, $1.50; 3½-inch, $1.10; 3-inch, $1.00; 2½ inch, 90c; 2-inch, 65c. Bingham smokers are the originals, and have all the improvements, and have been the standard of excellence for 22 years.

T. F. Bingham, : : Farwell, Mich.

1881 **PAGE & LYON MFG. CO.** 1900

We manufacture a full line of the latest BEE-SUPPLIES.

Our motto is, "Perfect Goods and Prompt Shipment."

Send for our new free illustrated catalog.

PAGE & LYON MFG. CO., New London, Wisconsin.

Marshfield Manufacturing Company.

Our specialty is making SECTIONS, and they are the best in the market. Wisconsin basswood is the right kind for them. We have a full line of **BEE-SUPPLIES.** Write for free illustrated catalog and price list.

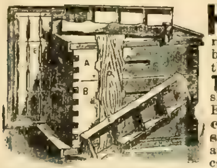
Marshfield Mfg. Co., Marshfield, Wis.

NOW READY!

64-page Catalog of Every Thing Bee-keepers Need.

Illustrated and fully described. Especially valuable to beginners for the information it contains Send your address on a postal and get it NOW. Established 1884.

J. M. Jenkins, Wetumpka, Alabama.



HONEY MONEY results from the best care of the bees. That results from the use of the best Apiary appliances. **THE DOVE-TAILED HIVE** shown here is one of special merit. Equipped with **Super Brood chamber, section holder, scalloped wood separator** and **flat cover.** We make and carry in stock a full line of **bee supplies.** Can supply every want Illustrated catalogue **F.**

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FACTS About Bees.

REVISED EDITION.

How to get

GILT-EDGED HONEY

Send 2c stamp to

THE A. I. ROOT CO., Medina, Ohio,

or F. Danzenbaker,

Box 66, Washington, D. C

BLACK AND HYBRID QUEENS. We shall have for sale 75 to 100, to be mailed between April 10th and 20th. Place orders early. 40c each; six for $2.00.

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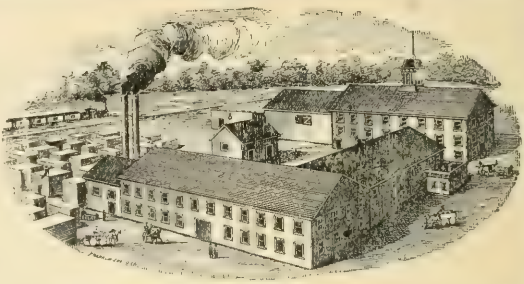
FOR SALE.—200 colonies of Italian bees in 8-frame hives; price $3.00 each, f. o. b. Eighty strong 3-frame nuclei with young Italian queens; price $2.50 each. W. C. GATHRIGHT, Dona Ana, N. M.

BEE-SUPPLIES!

We have the best-equipped factory in the West. Capacity, one carload a day; and carry the largest stock and greatest variety of every thing needed in the apiary, assuring BEST goods at the LOWEST prices, and prompt shipment. We want every bee-keeper to have our FREE ILLUSTRATED CATALOG, and read description of Alternating Hives, Ferguson Supers, etc. *Write at once for a catalog.*

We also manufacture TANKS of either wood or galvanized steel, all sizes, any form, and for all purposes. Price list free.



E. KRETCHMER, Red Oak, Iowa.

BEE-HIVES!

Chaff and single-walled, with a variety of section-cases.

Comb Foundation. Our prices on this will surprise you.

We do not limit our stock to one manufacturer's goods.

DISCOUNT SHEET TO DEALERS. Catalog describing Hives, Sections, Bees, Queens, and everything a bee-keeper needs, free.

I. J. Stringham, {Apiaries at Glen Cove, L. I.} **105 Park Place, N. Y.**

$1900, A.D. 1900,

will not buy my 500 colonies of bees, but am ready to furnish good Italian queens

BY RETURN MAIL.

1 Untested Queen, $1.00; 6 for $5; 12 for $9.
1 Tested Queen, $1.50; 6 for $8.50; 12 for $15.
1 Best Breeder, $4.00.
Nuclei, $1 to $10 in season.

Root's Goods at Root's Prices,

Plus carload rate freight.

Bees, Honey, and Beeswax bought and sold.

Watch My BARGAIN COUNTER in April.

Coin, double or single standard, Uncle Sam's Postoffice money-orders, bank draft, or registered letter, will get you prompt service.

W. O. VICTOR,
WHARTON, Wharton Co., Tex.

Don't Buy Supplies

Until you see my 40th annual catalog. A full line of hives and fixtures best adapted to our New England climate. Also best brands of **Comb Foundation and Section-boxes.** I have also made arrangements to keep quite a general stock of

A. I. Root Co.'s Goods at Their Prices.

Parties desiring these goods can get them of me, and **Save Freight Charges.** Bees, Queens, and Nucleus Colonies from the **very best strains** in America. A 40-page illustrated catalog free. Address

W. W. Cary,
Lyonsville, Mass.

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Honey Column.

CITY MARKETS.

KANSAS CITY.—The supply of comb is very light; demand good; the supply of extracted is light, especially white; demand fair. We quote fancy white comb, 15; No. 1, 14; No. 1 amber, 13½; No. 2, 13. Extracted, white, 8; amber, 7; dark, 6. Beeswax, 22@25.

C. C. CLEMONS & CO.,
Mar. 10. Kansas City, Mo.

BUFFALO.—The demand for honey is not quite so strong as it was, although the price is as last quoted. I think that, as soon as maple syrup commences to come, and the weather grows warmer, the demand for honey will not be as good as now. I would advise all holders of honey to clean up as soon as they can. It may be years again before it will go through the season as high as it has this.

W. C. TOWNSEND,
Mar. 10. Buffalo, N. Y.

CINCINNATI.—There is some demand for extracted honey from manufacturers, at 7@7½; for amber and southern clover, 7@8½. Comb honey is selling from 14@16½ in a small way. Beeswax, 25@27.

C. H. W. WEBER,
Successor to Chas. F. Muth & Son,
March 2. 2146-48 Central Ave., Cincinnati, O.

CHICAGO.—There is a small trade in choice to fancy white comb honey at 15; but aside from this there is little doing in any other grade, with an uncertain range of prices; for those who have it want to sell, and buyers can get reductions from prices asked. Off grades of white, 10@13; ambers, 8 to 10; dark, 7@9. White extracted, weak at 8c; ambers, 7@7½; dark, 6½@7. Beeswax, steady at 28.

R. A. BURNETT & CO.,
March 8. 163 S. Water St., Chicago, Ill.

COLUMBUS.—Market is bare of white comb honey—nothing on hand but dark amber, which is unattractive and slow sale. We are in the market for white comb.

EVANS & TURNER,
March 8. Fourth and Town Sts., Columbus, O.

ALBANY.—Honey market steady. Nothing new to report. Continued good demand for dark extracted for Jewish holidays. Beeswax quiet, 25@27.

McDOUGAL & CO.,
Successors to Chas. McCulloch & Co.,
Mar. 10. Albany, N. Y.

BOSTON.—Our honey market is showing some signs of lower prices, although the stock on hand is not large. At the same time, prices are so much higher than previous years that the trade have taken it very slowly, and the results are that the holders are willing to range prices quite a little in order to move stock on hand. Prices range, fancy white, 17@18; No. 1, 15@16; amber, 10@12. Buckwheat is almost unsalable. Extracted, best white California, 8½.

BLAKE, SCOTT & LEE,
Mar. 8. 33 Commercial St., Boston, Mass.

PHILADELPHIA.—Honey has been selling slowly; comb honey about cleaned up, so we have no quotations. Extracted honey, fancy white, 8; amber, 6@7. Beeswax, 28. We are producers of honey — do not handle on commission.

WM. A. SELSER,
Mar. 9. 10 Vine St., Philadelphia, Pa.

FIFTY DOLLARS.

We will gladly give the above amount for any popcorn that will equal in quality the Lawrence. All who have tried it declare they have never seen its equal. It is a remarkably good yielder; pops out full and white, not yellow-white, and has absolutely no tough center. This we know is saying a good deal, but the facts will bear it. You can get this seed of no other seedsman. After it is once tried in home or market no other kind will be taken. This corn we will sell in packet only, 100 seeds in a packet, 10 cts., and every packet we sell we will lay aside half the price (or 5 cts.) and on the first day of November next we will divide this money between the three persons sending me postpaid on or before that date the three largest ears raised from seed bought from me, the size of ear to be determined by the number of kernels. The packages will be numbered, and must be returned with the ear, and the number of kernels marked on the envelope. If we sell 1000 there will be $50.00 to be divided. If we sell 10,000 there will be $500 to be divided. It will pay you to try it, as it is worth ten times its cost to any popcorn raiser, even if you win no prize. To introduce our tested seeds to new buyers we will give a 25-CENT DUE BILL FREE with every order for the Lawrence popcorn.

— Address all orders to —

C. M. Goodspeed, Box 761, Skaneateles, N. Y.

Gleanings in Bee Culture

[Established in 1873.]

Devoted to Bees, Honey, and Home Interests.

Published Semi-monthly by

The A. I. Root Co., = = Medina, Ohio.

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E. R. ROOT, Editor of Apicultural Dept.
J. T. CALVERT, Bus. Mgr.

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We offer GLEANINGS IN BEE CULTURE to new subscribers three months for 15c, or 6 months for 25c. Renewals not accepted at these rates.

Sharpless Cream Separators—Profitable Dairying.

WANTED.—Young man to work on farm. Must be temperate and steady. No smoking. Address
J. W. NELSON, Shawmut, Clearfield Co., Pa.

Special Notices by A. I. Root.

We still have a pretty good supply of Davis wax beans, at prices away down below those of any other seedsman. Look over your catalogs, and see if I am not right.

GRAND RAPIDS LETTUCE.

We are just now cutting single plants in that greenhouse, that weigh ¾ lb., and retail readily for 15 cts. The plants are grown 7 inches apart from center to center. Do you want any better business than that?

KILLING INSECTS ON PLANTS WITH HOT WATER.

Water at 120 degrees will kill insects, even ants, when the plant is immersed in it for half a minute. One of the flower periodicals said 150 degrees would not kill the plants. We tried two roses at 140, and it spoiled the buds and killed the young shoots. It makes me think of what Josh Billings said—"Eggsperiens teeches a good skule, but the tuishun comes rather hi."

CRIMSON CLOVER.

Once more our crimson clover has passed the winter almost without damage in any way; and notwithstanding other adverse reports, I think we can call it settled that, on our rich underdrained ground, crimson clover, when put in in July and August, is pretty nearly if not quite a sure crop. On our creek-bottom ground it is a perfect mat, and it would take a tremendous freeze indeed to do it any damage now.

ADVANCE IN THE PRICE OF CLOVER SEEDS.

As we go to press, both alsike and alfalfa, first grade, are worth $8.00 per bushel. For prices in smaller quantities, see our new seed-list, mailed on application. The above prices make it a little hard for the friends who want to buy, but it is a tremendously good thing for farmers who grow it for sale. Now let us see if we can not furnish the world with enough nice clover seed at the same time we supply it with an abundance of the best honey there ever was.

POTATOES AT THE PRESENT DATE.

The principal call so far is for the Triumph, Bovee, and Early Ohio. We have sold out of all three several times, but have been able to buy some excellent stock of those who make it a business to grow nice seed potatoes. For a late potato, Carman No. 3 seems to be called for more than any thing else; but we still have a good supply. In fact, we can furnish you any thing we have listed at present writing, March 15, except Burpee's Extra Early. Better get in your orders quick, however, for a good many kinds will probably run short very soon.

TOBACCO DUST AS AN INGREDIENT IN POTTING SOIL.

If, when preparing your jadoo and sand for plants, you put in a generous admixture of tobacco dust, you can not only keep out angleworms from your pots, but all other worms and insects. The tobacco dust is an excellent fertilizer (about the same thing as woods dirt when decayed), and costs really less than the jadoo; for the dry dust is only 1½ cts. per lb. when purchased in quantities. Whenever we plant out Grand Rapids lettuce in the greenhouse we always cover the surface of the ground with tobacco dust, and this keeps off the green fly and every thing else until the crop is fully half grown. Sometimes another application has to be made under and over the plants when the crop approaches maturity.

BASSWOOD-TREES FOR SPRING PLANTING.

Now is the time to put them out. Seedlings grown in our plant-beds, one foot and under, 5 cts. each; 10, 30 cts.: 100, $2.00. The same postpaid by mail, 8 cts. each; 35 cts. for 10; 100, $2.25. Trees 1 to 5 feet, 10 cts. each; 10, 75 cts.; 100, $5 00. The latter size can not well go by mail. We can not furnish any thing larger than 1 to 5 feet at present; but we are growing some larger ones as fast as we can. The above trees are all grown in our rich plant-beds. We can furnish you seedlings, right from the forest, for half the above prices. These latter are all one foot and under. Basswood-trees will grow anywhere, and almost as easily as willow; but they must have moist ground—mulched ground is best—and the small trees should be shaded until they get well started. The basswood-tree is now getting to be so valuable that it will pay to grow the trees aside from the value of the honey; and I believe an acre of basswoods will furnish more honey than any other plant on the face of the earth, and in quality it stands next to clover.

THERMOMETERS AND BAROMETERS FOR GREENHOUSE MEN, GARDENERS, FARMERS, ETC.

We had decided on giving up thermometers with the rest of the counter store; but so many calls came for them, and as nobody else seems willing to furnish them, especially by mail, at a small price, we have ordered another stock. We can furnish you a very pretty and accurate thermometer, plain scale, easy to read, for 15 cents; postpaid by mail, 20. Now, thermometers are in every day use, like clocks and watches; but yet few people, in my estimation, are aware of the value of a barometer intelligently consulted every day or three or four times a day. Our barometer in our business has saved me hundreds of dollars—in fact, more than the value of the instument, a good many times, in just one day. We have a very pretty small-sized aneroid barometer that we can furnish for $2.50; postpaid by mail, 15 cents additional. Those who handle glass sashes can not afford to put them away safe from wind every time they are taken off or put on a bed. But when the barometer indicates a big blow (and I never yet knew a high wind unless the barometer gave warning beforehand) everybody who owns sashes should fix them so no ordinary wind will blow them about. On one occasion the barometer dropped very rapidly just before bedtime. A lot of sashes were left in very bad condition the night before. I fixed them in half an hour so not a sash was moved. Had I not done this, the broken glass would have amounted to a good many dollars; for before morning we had a wind that blew down trees and unroofed buildings.

Queen-Rearing Articles

are wanted by the BEE-KEEPERS' REVIEW. The May issue is to be a special number devoted to Queen-rearing, and it is for that issue that the articles are wanted. Go briefly over the subject, beginning with preparing the colony for cell-building, securing the eggs or larvæ, starting the cells, caring for them, starting nuclei, introducing virgin queens, or putting in cells, caging and mailing queens, giving all the little hints possible. Also give a few hints that will help the man who simply wishes to rear a few queens for his own use. For the best article on the subject, received before April 15th, I will pay $5.00 cash. For any other article on the subject, aside from the prize-article, that I think well enough of to print, I will send the writer the REVIEW for 1900 and one of those Superior Stock Queens.

The REVIEW is $1.00 a year; but to each subscriber for 1900 I will send 12 back numbers free. For $2 00 I will send the 12 back numbers, the REVIEW for 1900, and a queen of the Superior Stock. **W. Z. HUTCHINSON, Flint, Mich.**

DO YOU WANT TO MAKE SOME MONEY?

OUR PRIZE-WINNING White Leghorns, Barred and Buff Plymouth Rocks, Buff Cochins are money-makers. Utility and fancy combined. Friends, they will help to lift that mortgage. One thousand fine birds for sale at reasonable prices. Satisfaction guaranteed. Catalog free.

CRESCENT FARM, : BOX W, KENT, OHIO.
E. T. BLOOD, MANAGER.

We are Headquarters for the Albino Bee.

The Best in the World.

If you are looking for the bee that will gather the most honey, and the gentlest of all bees in handling, buy the Albino. I also furnish the Italian, but orders stand 50 to 1 in favor of the Albino. I manufacture and furnish supplies. Address

S. Valentine, Hagerstown, Md.

BEES AND QUEENS.

Either Golden Italian, 3-banded Italians, or Holy Lands, your choice. Nothing but the best of stock bred in 3 different yards, several miles apart. Send for circular and price list. It gives methods of queen-rearing, honey production, etc. Prices, either race: Untested, March, April, and May, $1 00 each; 6 for $5 00, per dozen, $9 00. Tested, $1.50; 6 for $8.00; per doz., $15.00. Untested, June, July, Aug., and Sept., 75c; 6 for $4.25; per doz., $8.00. Tested, $1.25; 6 for $6 75; per doz., $12.00. Special discount in large quantities. Breeding queens a specialty.

O. P. HYDE & SON, Hutto, Texas.

REMOVED!

EARLY QUEENS.

W. H. Laws has removed his entire queen-rearing apiaries to Round Rock, Texas, where he will be better fitted than ever to fill orders for the LAWS strain of FAULTLESS 5-BANDED bees the coming season. BREEDING QUEENS always on hand. Price $2 50 each. I am also breeding the leather-colored stock from imported mothers. Tested queens, either strain, $1.00; 6 for $5.00; untested, 75c; 6 for $4.00. Queens ready in season.

W. H. LAWS, Round Rock, Texas.

QUEENS

THAT EXCEL are the kind you **want**, the kind I rear. I am booking orders for them now. A fine lot of tested, select tested, and breeding queens on hand. They were reared under most favorable **conditions** from selected cells; only the **best** virgins were used. These select tested and breeding queens are the **cream** of the lot. A postal now will bring my catalog, when issued, with full particulars and prices.

J. B. CASE, Port Orange, Fla.

Beware of the Elephant

that you may get on your hands this season in the shape of a horrible bee-disease, by buying queens indiscriminately. Better be on the safe side, and buy from an apiary where a bee-disease of any description was never known in its region—that's ours—and at the same time get the best that money buys. I claim for my strain of Italians the desirable points of their own race and those of the blacks combined.

Orders booked now for delivery in season. Price $1.00 for warranted queens untested.

◆

JEWELL TAYLOR, Forestville, Minn.
Money-order Office, Spring Valley.

Established 1885.

Lone Star Apiaries.

Price of queens from imported mothers.
(Golden same price.)

	1	6	12
Tested	$1.50	$8.00	$15.00
Untest'	.75	4.25	8.00

Select tested, either race, $2.50.

G. F. DAVIDSON,
Fairview,
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Queens by Return Mail

The choicest of tested Italian queens, $1.00 each.

Large yellow queens, healthy and prolific; workers the best of honey-gatherers. Safe arrival and satisfaction guaranteed in every case. Send for price list.

J. W. K. SHAW & CO., Loreauville, La.

Dr. Miller's Honey-Queens.

One Untested Queen and the American Bee Journal one year, Both for $1.50.

We have been fortunate in making an arrangement with DR. C. C. MILLER—the well-known honey-specialist—to rear queens EXCLUSIVELY FOR US DURING THE SEASON OF 1900. These Queens will be mailed in rotation, beginning about June 1, so "first come first served." We are ready to book orders now.

The queens Dr. Miller will send out on our orders will be precisely the same as those he rears for his own use, so of course they will be from his best stock. His best colony in 1899 had a queen reared in 1898; May 5, 1899, it had brood in four frames, and he gave it at that time a frame of brood without bees. It had no other help, but May 25 a frame of brood with adhering bees was taken from it, and the same thing was repeated June 3, leaving it at that time five frames of brood. It stored 178 sections of honey, weighing 159 pounds (and that after July 20, in a poor season), being 2⅔ times the average yield of all his colonies. A point of importance is the fact this colony did not swarm, and an inspection every week or ten days showed that at no time during the entire season was there even so much as an egg in a queen-cell. Dr. Miller expects to rear queens from this one during the coming season.

The demand nowadays is for BEES THAT GET THE HONEY when there is any to get, and Dr. Miller has such bees. You will want to have a queen from his best, we are sure.

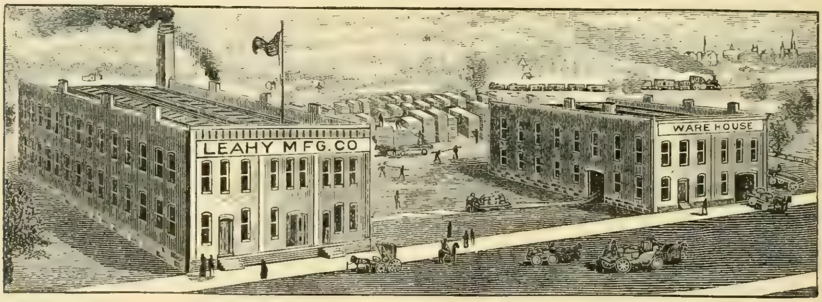
Don't send any orders to Dr. Miller, as all MUST come through us, according to our agreement.

Remember, send us $1.50 for the weekly American Bee Journal for one year, and ONE OF DR. MILLER'S UNTESTED HONEY-QUEENS. Queen alone, $1.00. Orders for queens to be filled in rotation, beginning about June 1st.

Headquarters in Chicago for Bee-keepers' Supplies.

Geo. W. York & Co., 118 Mich. St., **Chicago, Ill.**

Catalog and sample copy of the weekly American Bee Journal FREE. Send for them. Address as above.



For Apiarian Supplies, address **LEAHY MFG. CO.** Higginsville, Mo.
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The A. I. Root Company,

10 Vine Street,

Philadelphia, Pa.

Direct Steamer for Florida, Georgia, North and South Carolina, Virginia, Maryland, Delaware, and all points East and South.

All orders sent to the Philadelphia office will have same attention and care as Medina. 1900 goods now in stock. Order before further advance. We have 15 bbls. and 50 60-lb. cans of pure basswood and clover honey which we will sell at 8 cts. from Philadelphia.

GLEANINGS IN BEE CULTURE

A Journal devoted to Bees and Honey and Home Interests

Illustrated Semi-Monthly

Published by The A. I. Root Co.
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STRAY STRAWS FROM DR C. C. MILLER

L. STACHELHAUSEN, although an American, is better known among German than American bee-journals. German is his mother tongue, and he knows how to use it well.

FOR ERYSIPELAS, Dr. Haywardt recommends poultices of honey renewed every 3 or 4 hours. It immediately relieves pain, and brings convalescence in 3 or 4 days.—*Praktischer Wegweiser.*

IN THE WINDOW where I sit, in a little pot is an English violet with 24 blossoms. It doesn't make much show, but, oh how sweet! But a promise of show lies in 16 rosebuds in the same window.

THE RECIPROCITY TREATY with France, now pending, reduces the French tariff on beeswax a third. That will please Americans who have beeswax to sell, and displease those who have foundation to buy.

THE QUESTION is sometimes asked, "Will freezing kill foul brood?" Bacteria have been subjected to a temperature 216 degrees below the freezing-point, leaving them healthy and happy. Heat, not cold, must be our dependence.

I'M INTERESTED in that Bingham cellar. He says 2 lbs. dead bees swept out per month. Now, does that mean on the cellar bottom, or in the hives as well? There might be only 2 lbs. on cellar floor, and ten times as many on hive floors.

THAT BOTTOM-HEAT idea of Aikin's solar extractor is bright. We might have smaller extractors with a lamp for bottom heat. [Yes, I have thought of the same thing. If bottom heat is a good thing on a large scale, why not also on a small one?—ED.]

THAT'S NO JOKE about smokers in Germany that work automatically, sending a continuous stream of smoke. Next time I come across a picture of one I'll send it to you. But I doubt it's being so very desirable, as lately nothing seems to be said about it.

BRITISH BEE-KEEPERS have also been discussing the matter of having some way of gauging shades of color in extracted honey. Strips of colored paper, a colored plate sent out in *British Bee Journal*, colored glass, and small bottles of honey, have been proposed.

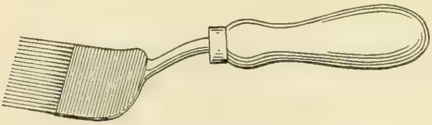
MRS. HARRISON says it's a mystery where the Florida bees get pollen in winter. That's a mystery not confined to Florida nor to winter. I've seen bees bring pollen on a mild day after every thing was frozen up, and I've known them to store honey when I could not make out the possible source. If Doolittle had been here, he'd have found out.

FRIEND A. I. ROOT, that Home talk, p. 181, fairly takes my breath away. If all would stand up as you have done, the party bosses would soon learn that the Christian manhood of the nation is a factor that must be reckoned with. Strange that so many good men have for so long submitted to be "like dumb driven cattle." Lately I was disgusted to hear a minister in the pulpit instructing the Lord in his prayer that McKinley was doing the very best he knew how. Bah!

TO START CUTTINGS.—Nail a bottom on a dovetail hive-body. Nail on a leg at each corner; fill half full of earth, and cover with two panes of glass. That's your greenhouse. Set it by the window in winter; in summer, anywhere not in the broad glare of the sun. Put in it your little dishes of wet sand with cuttings in them, and watch them grow. Florists will tell you to have bottom heat, and, of course, that would be better; but I never used bottom heat, and have rooted many a cutting.

"NATURAL SWARMING has a fascination about it that no mode of artificial increase can possibly have."—G. M. Doolittle, p. 176. I don't in the least doubt that's true from your standpoint, Bro. Doolittle Years ago the issuing of a swarm meant to you desired increase, and a glamor was thrown over the whole affair that will never fade away. With me there's a fascination about artificial increase; but there never was any about natural swarming. The announcement of a swarm fascinates me just about as the announcement that the cows have broken into the garden.

THE UNCAPPING-FORK seems to receive only praise in German and French journals—works more easily and rapidly than the knife, works well on tender and uneven combs, and costs less than the knife. Has any one tried it on this side?



DON'T GET things mixed. Soiled sections and greasy sections, more properly watery sections, are two quite different things. Soiled sections, covered with so-called travel-stain or greasy-looking bee-glue, may be found over all colonies in certain honey-flows, and especially at the close of the honey-flow. Greasy or watery sections, caused by lack of air-space between honey and capping, may be found over certain colonies at any and all times without regard to season or honey-flow. A section may be soiled and not watery; it may be watery and not soiled; or it may be both. [I suspect we have been a little careless in the use of terms for designating certain faulty boxes of honey. If so, let us use that phraseology which will describe the exact condition. But water-soaked comb honey, so called, and greasy comb honey, are practically synonymous terms to most people.—ED.]

MESSRS. MCLEAN AND WHITNEY have explained how greasy sections depend on the honey-flow and conditions. Now, friends, please explain this: I had a colony of Punics which made greasy sections all through the season, fast flow or slow flow, while other colonies made white sections. Also, last season I had a colony which made paper-white sections in a very slow flow, and all through the season, and no other colony did quite so white work at any time—same apiary, same shade, same conditions. Another thing: When the Punics had filled but not yet sealed a super of sections, I gave it to another colony, and it was sealed white, while the sections left on the Punic were sealed greasy. [Then you agree with Mrs. Barber and others that the queen or the bees, rather, do have a good deal to do with the greasy-section question; but it seems reasonable to me that weather conditions may have some slight effect, although it is probable that the kind of bees has the most to do with the matter.—ED.]

THAT BEST RESULTS in surplus honey could be obtained by allowing one swarm from each colony, was, I think, once the general belief. Gradually that belief has faded away, and able men who formerly advocated it are now among those working most diligently to secure non-swarming. [But are you sure you are right, doctor? It strikes me that most authorities still think that the one-swarm plan is the best under most conditions. Do you know of any non-swarming method for the production of comb honey that is regarded as practical for every one? The caged-queen plan is used very successfully by a few of the largest bee-keepers of New York, but a good many others do not like it. I had hoped that the large-brood-chamber method might be productive of good results, but many again declare this is not a success.—ED.]

PICKINGS
FROM OUR NEIGHBOR'S FIELDS.
BY "STENOG."

Old Sol has reached th' equator's line;
  The 20th he'll crawl over,
And call to life the dormant buds,
  The flowers, the grass, the clover.

His face (a million miles across)
  Is clothed with smiles and blessing;
He drives the fogs and damps away,
  The earth with beauty dressing.

The sun! the sun! he darts his rays
  O'er ninety million miles;
The sick revive, and bless the day
  That brings his vernal smiles.

* * *

AMERICAN BEE JOURNAL.

Prof. Cook tells us of a Mr. Clark, in California, who has a spring situated some distance to the west of his apiary in the canyon. He had a fine Jersey cow which he used to picket out to feed. The forage was especially good between the apiary and this spring. Mr. Clark observed that the bees were flying toward the spring for water in great numbers, yet the good feed tempted him to picket the cow on this line, as the apiary was some distance from the place, and he apprehended little or no danger. Yet the fact that there were so many bees did raise a question in his mind, but, not knowing that cattle were unlike horses, he picketed the cow slightly, so she could get away in case of an attack. At night, when Mrs. Clark went to get her, the cow was cold in death, and a great many bees were dead around her. Mr. Cook adds: "There are several facts in this account that I think are of special interest, and should be noted by all bee-keepers. The first is, that the instincts of the cow when she is stung will not lead her to run away as would be the case with the horse, and she stands by until stung to death. Mrs. Clark told me the cow was very close to where she was picketed. She had pulled the stake up so she could have run away if she had been so disposed. . . . . If Mr. Clark had discovered his cow at the beginning of the attack, and had led her into an enclosure, the bees, of course, would have left at once, and would have ceased the attack. If this had been followed by the use of wet blankets, very likely the cow's life could have been saved, even though she might, at the time, have received thousands of stings." By the way, Rambler gives an interesting account of his visit at Mrs. Clark's apiary, together with a picture of that lady, on pp. 940,'1, in GLEANINGS for 1895. Those having back numbers will do well to turn back and read this article.

BRITISH BEE JOURNAL.

The value of honey imported into the United Kingdom during last January was $6860.

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The expert of the Cheshire Bee-keepers' Association examined, in 1899, 1229 frame hives and 130 skeps. That probably shows to what extent the new has supplanted the old in England—ten to one.

◆

Mr. John Kibble, of Charlbury, speaks of "a bee-keeper who has lost sixteen stocks of bees through the hives being immersed or swept away by the flood. It thus follows that, in locating bees, one not only needs to provide shelter from the biting blast, but to make sure the spot selected is high and dry. It must be dreadful to a bee-man to find some morning that his hives have gone sailing off on the flood, to say nothing of the pecuniary loss."

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In regard to Mr. Doolittle's claim, that 92 degrees is the lowest point consistent with successful brood-rearing, one writer says he had the ill luck to break one of the outside sheets of glass. As a result the temperature was lowered, and in the day time stood more than once at 64 degrees. In the night it probably went lower, he thinks. All this time egg-laying went on, and without exception the brood hatched out successfully. He adds, "Hence I think that Mr. Doolittle, admirable guide as he is, is for once in error."

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A view of Mr. Miller's apiary is given, located at Castle Combe. If one likes variety of hive, here we have it. The apiary contains sixteen hives, each as different from the others as the 25-story sky-scrapers in New York and Chicago are from the little rookeries beside them. Mr. Miller secured last season 1252 lbs. of honey, half comb. He says: "All is sold, but not at the fancy prices mentioned in the journals recently. In fact, there is little chance in this district to sell retail while good sections of honey gathered in 1899 were marked in windows at Bath and Bristol at 9 and 9½ pence each."

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Mr. W. Loveday, of Hatfield Heath, says: "I kept some 1-lb. sections of the honey-dew stored by my bees in 1898 for over 12 months, and I find that, besides being quite wholesome, honey-dew keeps very well; in fact, I think it improved by keeping, losing some of the strong flavor that is usual with it." Mr. Loveday thinks there are very few places in England where a shilling (24 cents) per lb. can be had for honey other than heather. He says he recently saw extracted honey advertised at 6 pence per lb., jars included. That would be equivalent to 12 cents a pound here, or 9 cts. for the honey alone. I feel pretty sure the California people would be glad to sell all their honey at that rate.

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A correspondent well says: "I have been glad to read that many are making 10 pence to 1 shilling (24 cents) per pound for their honey; but on the other hand it seems there are plenty who are not so fortunate, and I think there is no good in publishing the *lowest* prices. The fact of our reading or hearing that some one has bought or sold honey at the lowest price is no guide as to its real worth. Some people sell their surplus at any price just to get it off their hands, only keeping bees for a hobby, and ignoring the poor fellow who is trying to sell his honey to help to keep the wolf from the door. Others lose their heads, it seems, when there is a glut, and the dealer buys from them at a ridiculous price, to sell at a good profit to himself."

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Concerning bumble-bees, a writer says: "They rapidly dwindle and perish as soon as the cool autumn days begin to be felt. From this period on until the sun has again become fairly high in the following spring, the bumble-bee continues its existence solely through its young queens, which spend the winter in solitary confinement, having burrowed into the ground and there buried themselves to a depth of from 6 inches to a foot or more. They remain in a torpid condition till spring, when they wake up and set to work to establish fresh colonies." Wouldn't it be a good idea to have a law to protect these useful creatures as well as the feathered tribes? I don't believe they have ever been appreciated as they should be.

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A correspondent asks the strange question if there is any analogy between brood foundation and "weed" foundation; also if glucose in the solid form (grape sugar) is a good bee-food. The editor replies: "Brood foundation is the kind used in brood-nests as distinguished from the much thinner and better quality specially made for use by the bees when storing honey in surplus chambers. On the other hand, 'weed' foundation takes its name from an American gentleman (Mr. E. B. Weed) who invented the new and improved process of sheeting by which it is manufactured. Glucose is not only entirely unfit for bee food in any shape, but we doubt very much if bees would touch it in the form sent. The very name of glucose used in connection with bees is hateful to all honest bee-keepers, by whom it is regarded only as the adulterant sometimes fraudulently used by unscrupulous persons in contact with honey gathered by bees."

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AMERICAN BEE-KEEPER.

A correspondent says:

> The first step toward scientific comb-honey production is the selection of the bees. Any bee that will gather honey will do for extracted honey, but not so for comb. Only those colonies should be selected that are nearest perfect as comb-builders, and whose cappings are the whitest. Only such colonies as these must be used as breeders. No drones must be allowed to fly from any colony, except those having these desirable qualities. No queen must be reared from any but colonies having these qualities.

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That "an apiary is a place where they grow apes," as expressed in the composition of a little schoolgirl, is rather contradicted by one of our amateur subscribers, who says he has "found out that bee-keeping is no monkey business."

Ridge-Pole Musings

ORGANIZED MARKETING.

How the Fruit-growers Protect their Interests.

BY R. C. AIKIN.

A few years ago there was much said about "protective tariff." For awhile I scarcely knew whether I was a tariff man or not; but after listening to speeches, and reading printed matter on the subject, I concluded there was something in a tariff that was contrary to the golden rule. It occurred to me that all men were brothers, whether divided by a county, State, or national boundary, and that a brother on the other side of the "great pond" was as much a brother as on my own side.

A change has taken place We have grown as a people and nation, till now ordinary national boundaries will not hold us. Our commerce has become immense, and is handled on a gigantic scale, and by great combinations. There is united effort being put forth in almost every line, till he who tries to do business other than in a wholesale way, except to live and deal with his *immediate neighbors*, can not cope with the powerful competition met everywhere. While it is unquestionably the business of governments to manage—at least to *control*—all the great public interests, it is not so done, but is left to the management of private corporations. Private interests are selfish in their nature, hence oppression frequently results.

I do not say that all combinations and unions of private nature are oppressive; but their tendency is to selfishness and discrimination; they can not be for the *general* good as if under general control. One railroad company in one or more States tries to draw and centralize business to its own territory to the detriment of another road's interests, and this is but an illustration of what is true of all competing interests in more or less degree. A tariff is put up against some other concerns' interests that works a hardship on *somebody*.

Fifty years ago almost every family was self-supporting. Whatever we had in the way of food, clothing, tools, or other necessities or conveniences, was made at home or done without. Now we live in luxury as compared with those days. The great combination of capital and united effort gives us comforts and conveniences that were not dreamed of a few years ago. Combination specializes. Specalism makes us more dependent one on another. Transportation facilities have made it possible for special farming, manufacturing, etc., where these things could not exist but for the facilities, and these very things tie us together in a way that we must depend on one another or cease our special pursuits, and move back into the woods and carve out for ourselves an old-fashioned home.

But soon there will be no place left for us to make a home; and if there were such a place, we would not leave the luxuries of the present day to take up the ways of fifty or one hundred years ago. I say we would not do it; and if we will not we must adapt ourselves to the present and follow the tide or be driven down. Organization and combination are dominant to-day. There is nothing wrong in this either; it is only the *abuse* of it that is wrong. Unquestionably, combination rightly used means the most good to the greatest number; were it otherwise, what would be the use even of government? Government is a combining and organizing to bring good to many.

I do believe that there is now altogether too much divorcing of combination from its proper channel — government, to the hands and power of private corporations; but this being true only intensifies the necessity of our combining as a protection that we may stand against combination improperly used or applied. The greater the extent of our commerce reaching out to distant fields and peoples, the greater the necessity of united and harmonious action. To-day it is bread from one State, iron from another, coal from some other district, and so on through the list of commodities, until we can not live except by one another's help. "We are all members of one body," and when one suffers all suffer. Oh that men could see that to afflict a fellow-mortal is to hurt self! But we are blind, and destroy one another, and so injure ourselves.

What, then, is the duty of bee-keepers of to-day? It is to help each other. Unite and stand together; do it for mutual help and mutual protection. Do it because we can not do much if we do not unite. To lie still and wait is to let a brother suffer for the help we could and ought to give.

As shown by the foregoing, we can not properly market unless we are united and co-operating. Every producing locality should work together; and when the product is to be transported to distant markets, instead of shipping by less than car lots, and paying much higher rates, combine and ship at car rates, saving considerable in freight, and obtaining a safer shipment. If our product were as common as wheat, corn, potatoes, live stock, and such, in the centers of production for these things, the case would be different. The former products are produced in such quantities, and the demand for them so great, that there are open markets and facilities for handling the goods at all times. Not only the facilities to do the business, but buyers in charge are constantly informed as to the market value of the article. They are bought at all times, and cash paid.

Honey production is more limited in any given location. Even the *best* producing localities scarcely justify special effort in places to receive and handle the goods, or get market quotations. Honey is not produced in sufficient quantity, nor kept through the whole year, to justify or induce the establishment of depots, or enough certainty to make one safe in putting time and money into it as a business, hence it becomes a side issue, and subject to too many difficulties and excessive margins to make the buyer safe.

To overcome these difficulties the only way is for the people of a district, say township, county, or State, to co-operate and handle their surplus from a common point, and by a common management. Other producing lines are not all so organized; but the most of them do have the advantages hereinbefore detailed, that give them reasonable service and cash at the producing point. But honey is subject to great risks and inconvenience, much of it "consigned" to unknown or untrustworthy dealers, to be handled *without proper intelligence* of how and when and what to do with the goods. When such is the case, can we wonder that there is dissatisfaction and complaint?

I can very nicely illustrate our needs by describing a local organization of fruit-growers of which I am a member. There is quite an industry here in growing strawberries, raspberries, blackberries, and some other small fruits. Individual producers were in the habit of shipping their own products, and all such goods are decidedly perishable, and must be disposed of at once, and with the least possible delay. Spot-cash deals, aside from local sales, were altogether out of the question. The fruit *must* be sold by consignment. The small producers could not have access to or afford the expense of commercial reports of standing of firms, hence the shipments were made, as it were, at random. The fruit must go somewhere, and go quick, or all be lost.

The result was that many times the fruit was all consigned to one already overloaded firm, while others were without. Some was sent to irresponsible firms, etc., entailing in various ways severe losses on the shipper. That is how it was when there was no organization. Honey is not so perishable; but do you not see that we are in the same general sea of difficulties?

At last we organized. The plan is a general organization in the usual form, with presiding officer, and a secretary and treasurer.

A small annual fee of 50 cents is charged each member. An annual meeting is held for the election of officers, election of a manager or salesman, ordering of supplies, and discussion of any subject of interest. One *business house* is chosen as selling agent, and this house has the *entire* management of shipping and collecting on shipments the individual members picking and delivering fruit at stated times at depot for certain trains.

The manager or shipping agent puts himself in communication with all possible customers or outlets for the fruit, selects his customers before the fruit is ready, has access to commercial reports, etc., and when the shipping season is on he gets daily quotations showing supply, demand, and prices in the various localities. The growers deliver the fruit some time before trains are due out, and the agent ships according to supply and demand. If the supply here exceeds orders, he divides the surplus, shipping it to the market that is most likely to be able to use it, favoring the most reliable customers. This avoids a glut in one place and a scarcity in another, and results in far less numbers of losses, both of overripe or soft fruit because of delay, and in defaults of payment by irresponsible firms. Besides the saving to shippers in this way, any unavoidable losses are prorated among the members, and the whole association bears this loss, and not individuals.

While honey is less perishable, and can be handled with more certainty, it is fairly represented in this fruit business. Fruit and honey interests might well go together where there is but a limited product of each; but whether united or separate, the advantages of organized effort are *decidedly* in favor of the united work. I am but a small producer of fruit; but whether little or much, I pick and deliver my fruit to the depot, and then my care ends, the agent shipping to so much better advantage than I can do it, that, after his commission is paid, I still have more for my produce than I could get for it myself.

Loveland, Col.

[I see that Mr. Aikin has told us nothing as yet of the organized effort to sell Colorado honey. Perhaps he will do so later.—Ed.]

CALIFORNIA ECHOES
BY J. H. MARTIN.

CANDIED HONEY, AND WHY.

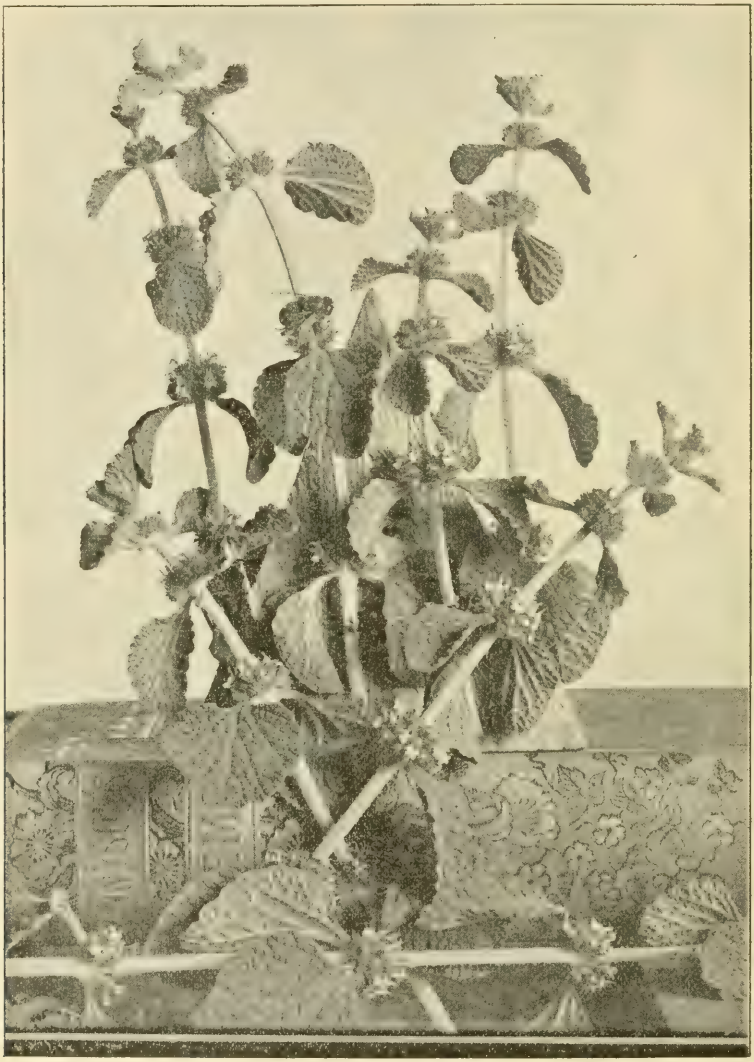
Mr. R. C. Aikin is receiving deserved credit for working up a market for candied honey; and while I think of it, I wish to mention one point in the scheme that has been overlooked. You all know that, when the purchaser gets to liking candied honey, he will eat more of it than he will when it is in the liquid state.

"Oh! but," you say, "each person is supposed to liquefy the honey;" but I think that, when a person gets to eating his honey in lumps, he will not want to liquefy it, and there will be much more consumed, and probably the best way to sell a barrel of candied honey is to set it up in the store window, take off the staves and then sell it by the chunk. That's the way Mr. McNay says they do in Northern Wisconsin. Let the good work go on.

PHONETIC SPELLING WITH A VENGEANCE.

Under phonetic spelling, the *B. K. Review* says: "They simply compel us to unlearn one unphonetic way of spelling a word and learn another unphonetic method." There is just where the objection comes in in my case. I like new things and novelties, and—why, I heard of a fellow once whose name was Peter Hole, and when he would write his name he would write Peter and jab his pen through the paper for the hole. Of course, that was Peter Hole, and the hole was phonetic with a vengeance. As Peter's method can not be adopted in a general way I thought I should like the new way as practiced in the *American*

Bee Journal, and commenced work upon it with considerable enthusiasm ; but I made a dismal failure of it ; for every time I set out on the new line of spelling, the subject-matter of the article or letter would claim my whole attention, and unconsciously I would be spelling right along according to the old way. It cost me several years of close application to spell the old way, and I will leave it to the editor that I am tolerably good at it, and I have come to the conclusion that I will let well enough alone, and not bother any more trying to learn the new way. I was just thinking that it must take the editor of the *American Bee Journal* an immense amount of time to queer over so many words ; but I suppose it is the poor fellow's only amusement, and we shall have to put up with it.



CALIFORNIA HOREHOUND.

HOW LUCK CHASES THE WISCONSIN BEE-KEEPERS.

I was spinning up Figueora St., in Los Angeles, the other day, and met a gentleman and lady also on wheels. We both shouted "hello!" in concert, turned our steeds to the sidewalk, dismounted, and had a little visit. The gentleman I had run against was Mr. Frank McNay, that wealthy bee-keeper from Wisconsin, and the gentleman who went on a Crow-hunt with me last winter. Mr. McNay spent the honey season in Wisconsin with his bees, secured a fine crop of honey, sold it for a good price, and now with his wife and niece he is to winter again in our beautiful city; and just think how luck will chase around after some people! He has a small apiary already. The very house he rented, and behind the wainscotting of the very room he occupies, there is a fine swarm of bees. All he has to do is to rap on the wall in the night, and say, "Are you there, my pets?" and for answer there comes a bu-z z-z. But now I have a sequel to my little story. Mr. McNay has concluded to make Los Angeles his permanent dwelling-place, and has purchased a fine residence in the fashionable portion of the city. Here is an example for almost any of those prosperous Eastern bee-men. I can not really understand why Wisconsin should be so extra prosperous; but it must be, for there is another bee-keeper from Ashland, that State, and his wife is with him. This is Mr. Smith—John, I guess. He called just to see the Rambler, and he said there was another bee-man in Wisconsin who told him not to fail to call upon the Rambler if he ever struck Los Angeles. I was somewhat under the weather when Mr. Smith called, and when I made a remark about my condition he hitched his chair up close and remarked that he was very deaf. "Oh dear!" said I to myself, "I am in for it now." But do you know Mr. Smith was the best deaf man I ever talked to? All I had to do was to say a word now and then, and Mr. Smith did the rest. Mr. Smith had such a cheery, hearty way with him that I actually felt better for his little visit. When he went away he said his wife wanted to see me, "and," said he, "she is a greater talker than I am." "Merciful heavings!" said I, "is that possible?" But he didn't hear me. I am sure I shall have a good visit with Mrs. Smith. I think the more of these Wisconsin people we get here the better it will be for us. I expect that Mr. C. A. Hatch will drop in upon me some day in the future. Mr. Hatch is a very good man, but a little premature on the housekeeper problem—i. e., housekeeper for the Rambler. I suspect Mr. Smith will be a little troublesome in the same way.

NO RAIN FOR SOUTHERN CALIFORNIA.

At this date, Feb. 9, we bee-men are getting anxious again about rain. Jan. 3 was the last rainfall we had, and things begin to look dry, and some of us begin to feel like flying to some other portion of the country, and even this flying may be to ills that we know not of. I was in my apiary yesterday, thinking of the ills that would come if we had another month of such weather, when there came a h-e-l-l-l-l-o! I thought he strung the *l* out rather long, but I shouted back a passably cheerful h-e-l-l-l-o! and who should make his appearance but Bro. Brodbeck? Well, we had a blue talk. I tried to be bluer than he was, but I couldn't match him; and before he went away I felt like apologizing to him for even trying to be bluer than he was. Well, if we have no more rain this winter there will be not a few blue bee-keepers. But we bee-men always part with the remark, "Of course, we shall have plenty of rain yet; there is time enough in March and April," and, having said this, we try to feel happy.

WILD DREAMS.

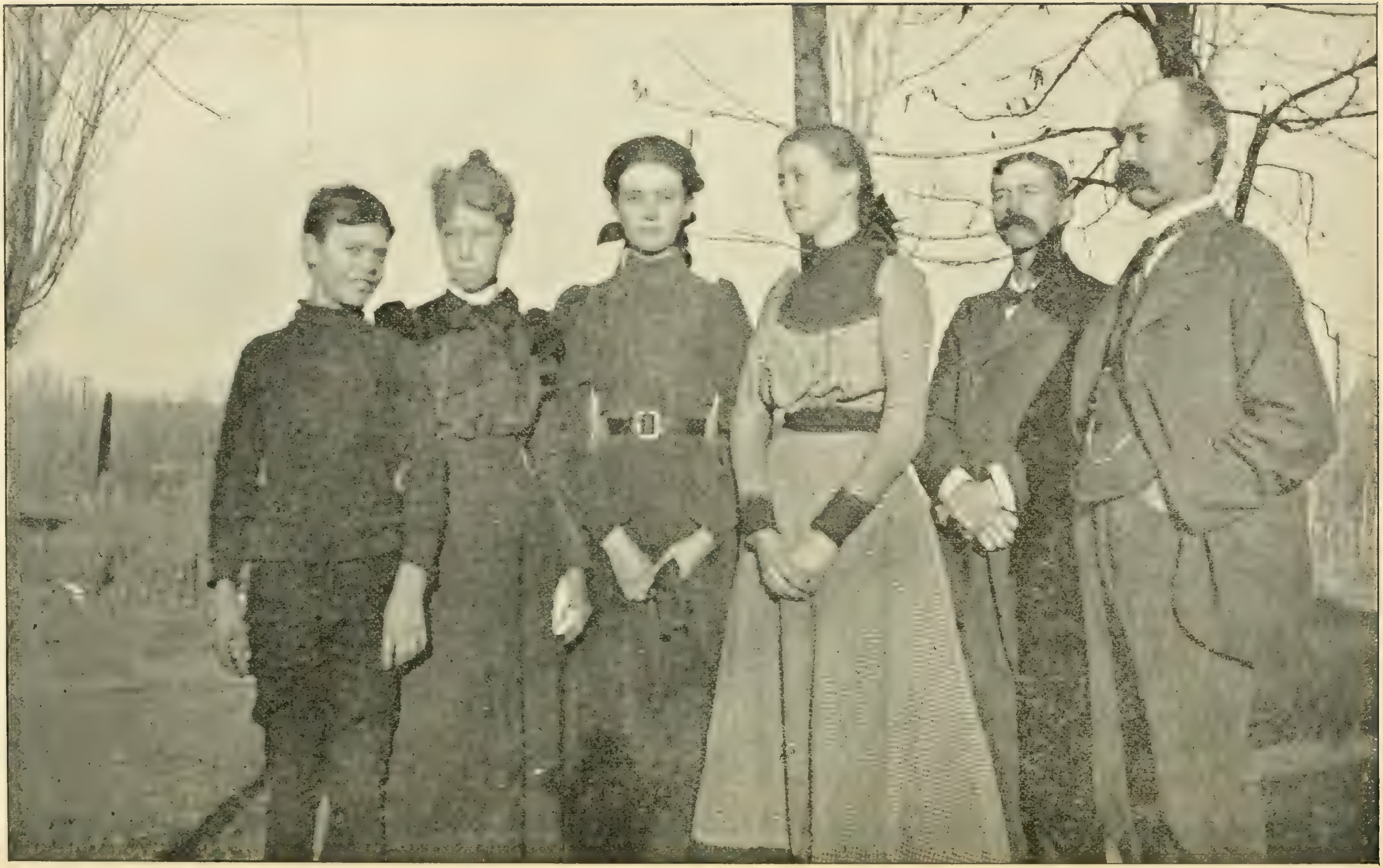
Glad you came to my defense upon that automobile matter, Mr. Editor. Dr. Miller terms it Rambler's "wild dream," and Editor York, in the *Amer. Bee Journal*, terms it "sportive." Now, to come down to solid facts, there is nothing wild or sportive about it—it is a thing and a factor to be. Why, Dr. Miller, don't you know that every invention, either great or small, was at one time a wild dream, or a mere figment of the imagination?

BEE-KEEPING AND BELGIAN-HARE GROWING COMBINED.

You will remember that Mr. McNay and the Rambler went on a Crow-hunt last winter. Well, that Mr. Crow has gone daft upon the rearing of Belgian hares. There is not a bee in his bonnet now. It is pedigrees, and all about does and other things. Los Angeles is the head center of the hare business for the United States. Within the past year it has grown to mammoth proportions. I don't know that there have been fortunes made from the business; but one thing is certain, there is a chance for the bee-keeper who goes into it to have something to live upon; for, if hard pressed, he can live upon his hares. They are very good eating. To-day there is a large exhibit of Belgian hares in the city—some three hundred entries—and there is much enthusiasm. Several bee-keepers have transferred their love from the busy bee to the quiet and peaceful hare, and they think they have struck something better than the uncertainties of bee-keeping. I am thinking that the Belgian-hare business could work well with bee-keeping, and there will be no use of giving up one to go into the other; but run both, and make a good thing out of each of them. It is possible the Rambler may make a run after the hares. If he does I shall expect Murray to be after him too. We shall see what we shall see later.

THE HOREHOUND PLANT IN CALIFORNIA.

Horehound is quite abundant upon this coast, and is classed as a valuable honey-plant. The honey is quite dark, and flavor strong. In some instances it gives a strong flavor and a taint to the lighter grades of honey, and on this account some of our bee-keepers are inclined to banish it. Horehound honey is, however, not so disagreeably strong as eucalyptus honey. Many prefer a honey with a tang to it. About the right amount is found in horehound; and I am sure that, if we could get a good amount of straight horehound honey, it could be sold for its medicinal properties. It will, perhaps, be remembered by some of the older bee-keepers that Mr. Hoge (so called) of New York, some years ago, claimed to own several California apiaries where the bees gathered nothing but horehound, and under the name of horehound honey it was sold for its medicinal qualities. Mr. Hoge's California apiaries were wholly fictitious, and the honey ditto as far as horehound was concerned. It was something like the "pure Vermont maple syrup" on sale in California—neither honey



W. L. PORTER AND FAMILY. SEE EDITORIALS.

nor syrup ever saw the State from which it purported to come.

Horehound has been disseminated throughout this State by the sheepmen, or, rather, their sheep. The seed-burrs will cling for a long time to the wool, and the seed disseminated over a large area. With the lessening of sheep-herding there will be a decadence in the area of the plant, and it will be a poorer source of honey. During the dry seasons horehound has been the means of helping out the season and keeping the bees alive, and in that respect it is no mean honey-plant.

GENERAL CORRESPONDENCE

HOUSE AND FIELD BEES.

The Age at which Young Bees Take to the Fields.

BY L. STACHELHAUSEN.

Dr. Miller mentions in Stray Straws, page 6, that my figures given on page 925 of last year's GLEANINGS are not exactly the same as generally accepted by bee keepers of this country, and asks: "Has he good ground for this?" The matter has not much bearing on the subject of that article, and I kept these numbers in my memory from the time I was a beginner in bee-keeping. At that time, about 35 or 40 years ago, Prof. Menzel had given the figures, and said that we could figure out how many eggs, unsealed larvæ, capped brood, house bees or field bees were in a hive, if we know the number of one of them. He found the bee commencing to gather pollen when 18 days old, but we shall see what others say.

Berlepsch found in three experiments the first gathering bees on the 16th day; a few years later he observed them on the 19th day. Doenhoff found the 19th day. Others observed, probably under other circumstances, the 12th and 14th day. A. I. Root said they will bring in pollen when about two weeks old, but if necessary can go out for it when but five or six days old. This does not agree with Berlepsch, who said that the young bees will have a play-flight not before the seventh day. Another experiment seems to indicate that the bee must be older than 11 days under the most favorable circumstances before it can gather any thing.

The fact probably is, all depends on the condition of the colony. If comparatively much brood is in the hive during the progressing development of the colony, the young bee will become a field bee later; contrary, if the brood is diminishing and no combs to be built. While a good honey-flow invites to work, it will commence this kind of work earlier in its life.

The answer to the question, how old a worker will get to be on an average in the height of the season, is necessarily guesswork. Menzel says, as accepted by me, 34 days; probably he guessed at 16 days field work because he supposed 16 days house work; but I do not know this. Prof. Cook says 30 to 45 days. Berlepsch thinks that, in the height of the season, the oldest bees of a colony may be three months old, and an average of six weeks may be right.

We do not even agree on the question as to what age the larva will be capped. In Langstroth we find 6 days; Menzel, 5; Cowan, 5; Vogel, 5. Root says between the 6th and the 7th day. Greiner, who made the latest observations I know of, found between the 5th and 6th day, and thinks 5½ about right.

We see the observations are so very different, probably according to circumstances, that I did not find it necessary to change what I had in my memory, and Dr. Miller will be just as right to stick to his tradition.

THE HIVE QUESTION.

In an editorial of the *American Bee Journal*, the same article of mine is mentioned, and said I was led to the conclusion "that for extracted honey a large hive is best, and for comb honey a small one." Certainly I did not mean to say this

For the welfare of the bees and their proper development it makes no difference whether the bee-keeper extracts the surplus honey, or takes it off in the form of filled sections. If a small hive is ill fitted in this respect for extracted honey, it can not become better for comb honey. By the present management we can not use the advantages of large hives in producing comb honey, so we can form only one conclusion, and that is, *the present management is incorrect.*

The problem is to find out a management by which all advantages of large hives can be utilized, and at the beginning of the honey-flow to get the colony in such a condition that the work in the supers is started at once, and all the honey stored there—that is, to get the brood-chamber in the best possible condition.

Converse, Tex.

THE HONEY-EXTRACTOR.

Some Historical Facts in Regard to its Early Introduction in the United States.

BY M. M. BALDRIDGE.

J. L. Peabody, of Denver, Col., who formerly resided at or near Virden, Ill., "brought out his extractor in 1870, it having been patented in 1869. I believe this was the first American honey-extractor, and perhaps the first in the world, that was ever put upon the market." I find the foregoing statement on page 57, and evidently written by E. R. Root.

I am pleased to learn through friend Root that my old friend Peabody is still alive, and, I trust, is also in good health. I was personally acquainted with Mr. P. prior to 1870, and while he was residing in Illinois. I have often seen the Peabody honey-extractor, but I did not suppose it was "the first machine that was ever put upon the market in the United States," nor did I suppose friend Peabody ever so claimed it to be.

In any event I think I have plenty of proof to show to the contrary. I have some old letters from which I will quote a few lines. They were written by Mr. A. E. Trabue, a practical bee-keeper residing near Hannibal, Mo.; but whether Mr. T. is still alive or not I do not know. April 29, 1868, Mr. T. wrote me thus:

"You speak of honey-emptying machines, Langstroth speaks of further improvements in his last circular, '*not patented nor patentable*,' and for two frames only, I think. Do you make that machine, and at his price? If so, send me one by express. I have one of my own make that I used last year, but it is too large."

Again, May 4, 1868, Mr. Trabue writes me thus:

"Enclosed is check on Horner, New York, for $15. Send me one honey-emptier with latest improvement and knife."

Soon thereafter I sent the desired machine to Mr. Trabue as per his instruction. That honey-extractor was one that I bought of father Langstroth in the spring of 1868, and possibly it was the first machine that was made for sale in the United States. It was sent to me from New York, but from what point I do not just now recall. The machine was made at some factory there, and for father Langstroth. The machines were made only as ordered—at least father L. so states in his printed circular dated February 20, 1868, and which is also in my possession.

The revolving box in the Langstroth extractor was made for two combs, and the outer case was simply a well-made barrel. It had no gearing, but simply a horizontal crank on top of the upright wooden shaft, and was operated somewhat similarly to the Peabody machine as shown on page 57.

I did not like the way the revolving box was operated, and thought I could improve the machine by substituting a gearing for the crank. I also thought it would be better for me to make the outer case nearly square and of whitewood lumber. I began at once to make a number of extractors as outlined above. One of these machines I sold in 1868 to Jas. M. Marvin, of this city, who, at that date, was one of the oldest and most extensive bee-keepers in Illinois. Mr. M. died a few years ago. He used this extractor from 1868 up to the year of his death, and extracted an immense amount of honey with it. Mr. M. often stated that he had never seen a better and more substantial honey-extractor, and that he would not exchange it for any other on the market. And this same machine is still in good repair, and is now owned in this city by a nephew of Jas. M. Marvin, deceased.

In 1868 I advertised by circular and otherwise my own make of honey-extractors for sale, and nearly all I sold that year were geared machines.

Reliable history is what the bee-keepers want, if any, and this is my only apology for the foregoing.

St. Charles, Ill., Feb. 22, 1900.

[When I spoke of the Peabody as being the first put on the market I meant the first one that was advertised and sold to any extent. The Peabody and other extractors that I named were advertised and sold very extensively in the early 60's. I do not find either yours or Langstroth's extractor advertised in the old back volumes of the *American Bee Journal* from '58 up to '62. I do find where Langstroth described his early machine in '58, and that he thought there was a great future for the "honey-emptying machine." However, all the data that you have furnished are interesting, as you are one of the very few surviving pioneers of the early days of bee-keeping as a business in this country.—Ed.]

* * *

WINTERING IN A CAVE.

A Low Consumption of Stores; Some Interesting Data.

BY JOHN R. MILLARD.

I thought perhaps you would like to get reports on the amount of honey that bees consume where they are wintered in a cave, so I send you in this letter my report with them for the winter of 1889. I used one of your new double-beam scales, and weighed them Nov. 4, 1889, then again Apr. 4, 1890. I had 35 colonies that fall, and never lost any in wintering. I think they went through the spring all right. I am sorry now that I destroyed the record of when I put them in the cave and when I set them out; but I think I put them in as soon as I would weigh them. Yes, I know now, as I would weigh a hive, carry it

	Nov. 4, '89. Wt., lbs.	April 4, '90. Wt., lbs.	Lost, in lbs.
No. 1	52¼	42¾	9½
" 2	52½	41¼	11¼
" 3	43¾	37	6¾
" 4	59	46¾	12¼
" 5	58½	48	10½
" 6	60½	50¼	10¼
" 7	58½	47½	11
" 8	62¼	50¾	11½
" 9	62½	51¾	10¾
" 10	55	46	9
" 11	56½	46	10½
" 12	58¾	43½	15¼
" 13	58½	51	7½
" 14	56¼	43½	12¾
" 15	56	43¾	11¼
" 16	53¼	42½	10¾
" 17	63¾	53	10¾
" 18	64	54½	9½
" 19	60¾	52¾	8
" 20	65½	53¾	11¾
" 21	55	44¾	10¼
" 22	54½	43½	11
" 23	58	44¾	13¼
" 24	56	49¾	6¼
" 25	58½	48	10½
" 26	57¼	50½	6¾
" 27	54¼	41¼	13
" 28	58	49	9
" 29	63¼	54½	8¾
" 30	58½	49½	9
" 31	58½	47	11½
" 32	63¾	56¼	7½
" 33	56	47	9
" 34	59	50	9
" 35	57½	47¼	10¼

WEIGHT OF HIVES CONTAINING BEES.

Average weight Nov. 4, 1889, $57\frac{31}{35}$ lbs.
Average weight April 4, 1890, $47\frac{18}{35}$ lbs.
Average loss in weight to each hive, $10\frac{13}{35}$ lbs.

into the cave, and suppose, as soon as I set them out in the spring, I weighed them; for I would always set them out when soft maple commenced to bloom, and that is from the middle of March to the 10th or 15th of April. They were all in 8-frame hives. I suppose there is not another as good a cave in the State as the one I wintered them in. It was 33 ft. long in the clear from back end to end under the stairs; over 6 ft. wide and over 6 ft. high, all walled with brick, and arched over, then all cemented, and a thick cement floor. It had two doors, one at outside and one at foot of stairs. It had two ventilators and a drain. The dirt on the roof was not ridged up, but was level with the surrounding ground, and yet there was over three feet of dirt over the shallowest part of the cave roof. The floor was 10 ft. below the surface, and big changes in temperature outside had no effect inside—a perfect place for bees to sleep all winter.

Flagler, Iowa, Dec. 11.

[These experiments in cellar-wintering agree very closely with a similar table showing recorded observations as made by Dr. Mason. There is no question but that indoor bees, *under favorable conditions*, consume less stores by a third than those wintered outdoors. But not every one has either the means or the skill to bring about these conditions.—ED.]

WHAT ARE THE BEST QUEENS WORTH?

Three and Four Hundred Dollar Queens; the Revenue a good Queen May Bring in from Honey Sold.

BY W. A. H. GILSTRAP.

The recent talk about $100 queens has been a genuine surprise to me on account of writers in GLEANINGS and elsewhere considering the price so very high. Why so? The A. I. Root Co. wanted the best queen in the United States, or at least one of the very best. They have some good bees with which to compare her. She must produce workers which are good comb-builders, gentle, hardy, pure stock, decidedly ahead of their associates in storing honey. The queen is supposed to transmit her desirable qualities to her royal daughters. That is one of the main advantages, if not the principal one, that pure stock offers. Now, what can a honey-producer afford to sell such a queen for that is one or two years old? Perhaps she is two years old before her owner has all the desirable qualities fully established.

Of course, frame and hive manipulation can be made much easier with such bees. Aside from the real pleasure and comfort derived from handling such stock, there is a direct saving of time, which is worth enough to go a long way toward requeening. If you have ordinary Italians, this point alone would not pay for requeening; but with cross bees it would.

But the main advantage to be gained is in filling cans and sections so much faster. According to page 829, Nov. 15, Mr. Wright has a queen whose colony leads all others in his possession by over 90 lbs. in 1899 and 1898. Leading poultry authorities say that, in scoring a breeding-pen of chickens, half the points should go to the cock. But the apiarist can pit, not one male against six or eight females, but he can divide desirable qualities between one female and a practically unlimited number of males. I see no reason why Mr. Wright could not raise his average per colony over 40 lbs. in sections, by requeening from Mrs. Sweetheart. Let the reader decide how much that would be worth in his locality for 100 colonies. What value would that amount pay interest on at three per cent? Doesn't that make $200 look small?

Some may object to the above on the ground that such a queen is a freak, and will not transmit her desirable qualities to the extent indicated. Let's see. Perhaps Messenger was the greatest desirable freak among horses. His desirable qualities have been intensified by judicious breeding until all the world wonders at the result.

The writer's experience along the same line might be of some interest. For years I have been trying different strains of Italians, with various degrees of success. My best workers were never vindictive except in one case, and they were evidently badly mixed with Cyprians. The leather-colored bees proving more desirable than any I had found, convinced me that a colony I had occasion to examine frequently last winter was about what I wanted. These bees were in an old leaky hive, were quite strong, a trifle lighter than some Italians I have imported, very uniformly marked, and very gentle. I bought the queen, and was told that, of about 100 colonies in that lot in 1898, all were moved to another range because they were "starving out" except the one in question. They were not moved, as it was not considered safe to move so much fresh honey on unwired combs in hot weather. Being so strong caused fear of swarming, and the apiarist divided the colony.

After I bought the queen I put her in a more desirable hive. In due time the cells were all removed but one, which produced a fine queen, and evidently mated with a drone from the same colony. She is little if any inferior to her mother. I do not remember being stung by bees from that hive except when they were pinched in handling frames; but frequently they would have stung if a little smoke had not been used. Her daughters were mostly mated to Italians or high-grade mongrels, but they had colonies inferior to their parent stock. I think my average yield from these colonies was between one and two dollars better than from others in the same kind of hives, at least.

The point that interests me now is to determine how much in-and-in breeding can be done without detriment to vitality of the stock. Those who are determined to raise very yellow bees without much reference to any thing else need not worry about vitality. So far as my experience goes, there is little danger in that line. Can some of the veterans give more light?

Some months ago I was on the point of

challenging the United States on the point of stock; but now I crawl back into my shell, and decide to invest more in promising strains of bees than ever before. When compared to stock, the hive question is a small one. Let every honey-producer say, "I want the best, and am willing to pay for it." Let those who are confident they have the best (I am not) quit talking about selling their best queen for $100 or $200, for it is a losing deal to a practical bee-keeper. Compared with their wealth-producing power, such queens as we see descriptions of lately should not sell for $200. Had I a queen equal to one or two described of late, twice that would not get her.

Grayson, Cal., Dec. 22.

CONVERSATIONS WITH DOOLITTLE.

AMONG THE BEES IN SPRING; SPREADING BROOD FOR HONEY AND INCREASE; UNITING TO KEEP DOWN INCREASE AND TO RUN FOR HONEY.

Burt D. Buckley, Salamanca, N. Y., called on me by letter a few days ago, wishing me to tell him and the readers of Gleanings just how I managed the bees in spring so as to secure good results in comb honey. While reading his letter I was reminded of a conversation I had with a gentleman who came to see me on this very subject a few years ago; and as I remember our talk quite well, and seeing no reason for talking differently at this time than I did then I will imagine it is Mr. Buckley talking with me, instead of the gentleman of former years, and in this way give Mr. B. just what I would say to him were he right here in my presence.

"Mr. Doolittle, I called to see you this morning about how to manage bees in the spring so as to secure the best results from both the strong ones and the weak. How early should I commence operations?"

"From 30 years' experience I am persuaded that there is nothing gained by commencing too early, as from six to eight weeks is sufficient time to build up a fair colony in the spring to one sufficiently strong to store honey to the best advantage."

"But what am I to understand by 'too early'?"

"As white clover is the first plant to yield nectar in sufficient quantities to pay to work for honey for surplus, here in York State, the time of its general blooming is to be our guide. In other sections of the country, doubtless other plants or trees may be a guide to go by; but all should know just what gives the first yield, sufficient to pay in surplus for a special working for that yield."

"About what time does white clover begin to yield nectar?"

"As clover usually begins to yield nectar in this locality about June 15 to 20, the first of May is soon enough to commence managing the bees for increasing their brood more rapidly than they naturally would."

"Do you think it pays to go into the brood-chamber and overhaul the frames, etc.? Some are opposed to such a thing, believing more harm than good results therefrom."

"I know some think it does not pay to change the brood-combs by way of reversing them, putting combs of honey in the center of the brood-nest, etc.; but after years of experimenting I am satisfied that it pays *me*, whether it does others or not."

"Well, how do you manage?"

"Before telling how I manage I want to tell you of one experiment tried to see if it paid to try to build the bees up in spring faster than they would naturally do it themselves, for on this matter of pay rests nearly all there is of bee-keeping, to the average apiarist."

"I shall be glad to hear it."

"One spring, several years ago, I set apart ten colonies, all of which had plenty of honey, and were as near alike as possible, to obtain ten colonies of bees at that time of year. After seeing that all were in proper condition, five were left to themselves, and the other five worked according to the plan which I will soon tell you about. The five let alone were two weeks behind the others in swarming, and upon footing up the results in the fall I found that they gave only two-thirds as much honey as the other five which were managed as I usually manage bees. From this and many other experiments of a similar nature which I have tried I conclude that it pays, and so attest my faith by adhering to that which gives me the greater profit."

"That does appear right, and makes me anxious to hear more in the matter. How do you proceed?"

"About the first of May I go over the whole yard and examine each hive to see how much brood there is; and all colonies which do not have an equivalent to 2½ frames full are shut upon the frames of brood they do have by means of a division-board, or dummy, as it is sometimes called; while those which have that amount, or more, are allowed the whole hive. To keep the smaller ones in the best possible condition, and guard against starving, a frame of honey is left beyond the dummy, under which the bees can go and carry in this honey as needed."

"Is that all you do with the strong colonies?"

"At this time the strong colonies have their brood-nest reversed by putting those frames having the least brood in them in the center of the cluster, and those having the most at the outside."

"What's that for?"

"This causes the queen to fill these center combs with eggs as fully, or more so, as were those which were in the center before; while the brood in those now outside is not allowed to decrease at all. Thus quite a gain is made with very little danger of chilling any brood, no matter how the weather may shape in a day or two."

"What is the next move?"

"About a week later I take a frame having considerable sealed honey in it, and break the sealing to the cells by passing a knife flatwise over it. After spreading the frames apart this frame is placed in the center of the brood-nest. The removal of the honey from this frame causes the bees to generate a greater amount of heat, and feed the queen more abundantly, thus stimulating brood-rearing as much as or more than by any method of feeding."

"Where do you get such frames of honey?"

"There are generally plenty of such frames of honey in the hives, near the outside."

"But suppose there were not."

"If I did not have the frames of honey I would fill empty combs with sugar syrup and use the same as frames of honey; but I consider the frames of honey preferable. As the honey is removed, the queen fills the cells with eggs, and at the end of another week another frame is added in the same way."

"What further?"

"The next time over the brood is reversed, as at first; while at the end of the fourth week, two frames, instead of one, containing honey, are placed in the center of the brood-nest, leaving one or two frames of brood between them"

"The hive must be about full of brood by this time?"

"Yes, if you are using an eight-frame hive; but it would lack two, if a ten-frame hive. If the ten, a week later, we put the remaining two in the center, if the queen is prolific enough to keep that many filled with brood. It is now about June 6th to 10th; and as soon as the bees gather more honey than enough to feed the brood, the sections are put on."

"But what about those shut on their frames of brood by using a dummy?"

"Those are left as they are till the frames we gave them are well filled with brood clean out to the corners, when they are given a frame of honey in the center, and then manipulated as were the others, till they are in the same condition."

"Is there no way of booming these ahead faster by giving them brood from the stronger colonies?"

"Yes. If I wish as many colonies as possible, I begin to take brood from those having their hives full first, and give to the stronger of the weak colonies, and later to the next stronger, till all are built up to strong colonies."

"Why do you not give frames of brood to the weakest ones first? That is the way I should do."

"This is the way I formerly did; but after losing several frames of brood, and materially weakening the colonies to which it was given, I learned that, to give a frame of brood to a very weak colony of bees, before settled warm weather, was almost sure to result in loss."

"You said, a minute or two ago, something about wishing as many colonies as possible when you worked as given. Supposing you did not wish many colonies, what then?"

"If I wish honey instead of increase, I work all of the weaker colonies till they have four or five frames of brood, according to the number of frames my hives hold, when three or four frames of brood, bees and all, are carried to another, and united with it, while the frame having the queen upon it is placed back in the hive again."

"But won't the bees quarrel when thus united?"

"The frames in the hive we wish to unite the four frames of bees and brood with are spread apart, and the four frames placed in each alternate space, as bees thus mixed seldom quarrel or harm a queen at this time of year."

"What is further done with this united colony?"

"In two weeks this united colony will be as strong as any in the yard; and as soon as strong, and honey coming in, the sections are put on, as was spoken of before."

"What about the hive having the frame with the queen on it?"

"This little colony can have a frame or two added to it and used as a nucleus for procuring surplus queens from, or any other purpose desired by the apiarist. They can be very profitably used for comb-building, for they are almost sure to build nice straight worker combs."

In the above I think Mr. Buckley will find answers to all he wished to know. It not, he knows the way to this place again.

HEADS OF GRAIN FROM DIFFERENT FIELDS

HONEY FROM HICKORY, OF GOOD QUALITY; IS IT A SECRETION FROM THE LEAVES OR FROM INSECTS?

Friend Root:—As I have had a little experience with hickory honey-dew I take the liberty of answering the query of E. D. Howell, page 88. In the summer of 1889, just about the time basswood was closing, the hickory-trees, especially the second growth, began to produce a flow of honey which lasted ten days or two weeks. Every leaf seemed dripping with it, and it did actually drip off till the dry leaves and grass were coated with it. The bees would work from daybreak until about 9 or 10 o'clock with as much vim as when on basswood. At this time it would begin to dry and would get so thick that bees could not gather it. I have seen them stick fast to the leaves when they would alight. About 3 in the afternoon it would begin to soften up and flow again, when the bees would have another rush till dark. They would drop in front of the hives till the ground would be literally covered with them going in on foot. The whole top surface of the leaves would be a solid mass of honey, and the only thing visible in the shape of "aphides" was that, occasionally, on the under side of a leaf I could see a small pale-green insect. Whether they had any agency in the flow or not I could not say; but I don't believe they did, for I have seen them several times since, and no honey. I candidly believe it was a "natural" production of hickory-trees, as it was on nothing else, caused by atmospheric action. The flow suddenly ceased after a heavy shower. I had several hundred pounds of it in 1-lb. sections, and a ton or more of extracted, and it was the "finest" honey I ever saw—whiter, if possible, and heavier-bodied, than any basswood—a very sweet, rich flavor. Any one who has ever scraped the waxy exudation from the top of a newly cut hickory stump in the spring of the year, and tasted it, can tell what the peculiar flavor was; but it was far milder. Another peculiar feature was that my wife (now dead) used it for all kinds of cakes, sweetening sauce, and preserving all kinds of fruit, and there was no more "honey" flavor than from the best granulated sugar, even while hot; and how I have longed and watched every season since for another flow of hickory-honey-dew! Should I ever be favored with another I will remember you with a sample of it. ELIAS FOX.

Hillsboro, Wis.

[I have always had the impression that the product from the hickory-tree was almost black, and decidedly poor in flavor; but probably this was a mistake.

But I should be very much disinclined to believe that the saccharine matter, whatever it is, was the secretion of the leaves of the tree. Not all the so-called honey-dew from aphides is of poor quality by considerable. Some of them are very palatable, Prof. Cook says, and the product from the aphides of the hickory may probably be classed among them. The very fact that you saw aphides at all, indicates pretty strongly that they were responsidle for the sweet varnish on the leaves. While it may be true that you have seen the aphides without the honey-dew, that fact would prove nothing. There may be conditions under which aphides will give off this exudation, and others when they will not. I should be glad to hear from others who have evidence to offer.—ED.]

HOW TO SECURE THE GREATEST INCREASE WITH THE LEAST EXPENSE OF SURPLUS.

I have fifty colonies of bees which thus far have wintered well. As a result of a poor season I have left over 40 ten-frame two-story hives with sufficient foundation to give all frames full sheets. I have also 350 empty combs. Thirteen of the colonies are in eight-frame hives fitted with two supers, each for comb honey. What I wish to know is, by what plan to manage them to secure the most increase at the least possible expense of surplus. I am aware that locality has a great deal to do with the plan, so I will explain.

The bees can gather pollen from natural sources as soon as it is warm enough for them to work, which is about the middle of April, or perhaps ten days earlier some seasons. They usually build up rapidly, and the strongest will swarm the last of May; but the most swarm in June. The honey-flow is gradual, increasing to August, which is *the* great honey month, and continues right up to the first frosts, which come from the 1st to the 7th of September, and ceases altogether in twelve to fifteen days later. B. F. JONES.

Idaho Falls, Ida., Jan. 27.

[Much will depend on whether you propose to run for comb or extracted honey, and also whether you would furnish laying queens to each nucleus or division of a colony.

If working for comb I would see that all sections were supplied with full sheets of foundation. Then I would take care of all swarms on the clipped-queen plan; that is to say, I would hive the first swarm in an empty hive on frames of foundation — the hive to be placed on the stand occupied by the old one. The super I would then place on top, and, as soon as a swarm returned, release the clipped queen, and let the bees, queens and all, run into the new hive on the old location. The bees would then carry on the work in the super just where they left off. The *old* hive, or parent colony, with its brood and queen-cells, and the remaining bees, are to be put in an entirely new location. I would remove the cells, if good ones, and give it a laying queen; and as it becomes strong enough so as to swarm I would treat it as above. The cells secured, if from a good queen, should be given to nuclei.

But in most localities the parent colony would not swarm again that year; and the only thing that could be done then would be to stimulate by feeding a little every day. When it becomes strong enough, divide it into one or two nuclei, giving (to each) one or more frames with full sheets of foundation. Feed each nucleus, and supply it with a laying queen. If you could not afford to buy queens, set apart several colonies for the raising of queens; and as soon as the queens have begun laying, keep them in small nucleus-boxes containing one or two sections and a hundred or so bees. The entrances to these little nuclei should consist of one or two holes of perforated zinc, and four, six, or eight boxes should be placed on the top of a strong colony, with wire cloth beneath, so that the warmth of the powerful colony below will supply the necessary heat for the bees in the little boxes. As fast as queens are wanted for increase I would take one or more from these little nucleus-boxes, which will then be supplied with more laying queens, as soon as they are ready, from queen-rearing nuclei. The purpose of the little section-box nuclei is to hold the surplus of laying queens until they are wanted.

But in your locality I should judge that you would not need to carry on any stimulative feeding; and I see no reason why you could not increase 12 colonies up to 100, and secure, perhaps, from 1000 to 3000 pounds of honey. But the larger the increase, the smaller will be the amount of honey, and *vice versa*.

If I were running for extracted honey I would take away combs and brood as fast as a good strong colony could spare them, and put them into empty hives as nuclei. Give to each nucleus, with its combs and bees, one or more frames filled with full sheets of foundation. Keep on forming nuclei thus; and then, if you have them, supply them with laying queens, or virgins that will begin to lay in a short time. But it is best to leave virgins in the hive until they are fertilized, because it is hard to introduce them.—ED.]

BEES ON SHARES.

Where one has bees on shares, is it customary to divide the increase at swarming time, and make up the losses to the owner of bees, as they occur during the season? I don't know just what is customary.

Fresno, Cal., Jan. 10. A. A. CONEY.

[When bees are kept on shares it is the rule for both parties to share equally in the profits, and in the expenses and losses. The time of the one who contributes the labor is supposed to offset the capital of the other in the form of bees, hives, implements, etc. Carrying this principle out, each party pays for half of the new hives, sections, shipping-cases, honey barrels, honey-cans, etc.; and each party receives half the proceeds of honey and bees sold. At the end of the season the increase is divided equally between them. For instance, if there is an increase of fifty colonies from swarming, each would have 25 colonies, including hives and a half-interest in the supplies left over. If at the beginning of the season the owner has 25,000 sections, the one who is supposed to work the bees is expected to pay half their cost, including freight.

But if half the bees die during winter, notwithstanding the fact that the operator puts them up the best he knows how, carrying out the same rule, he should make good half the loss of the bees. And right here is where many troubles arise. The operator is apt to complain, and with a fair show of justice, that he ought not to be expected to pay for bees that were lost during winter that were not his legally. But here comes the owner, and says that, if his partner had taken care of the bees, no such loss would have occurred, and then there is a row So it is well to have this particular point safely covered.

A large portion of the bees in Colorado are kept on shares. It very often happens that one may own 200 or 300 colonies, and work them as his own property, and, of course, in this case, receiving all the profits or suffering all the losses. In all probability he can not only take care of his own bees, but also of 200 or more colonies belonging to a neighbor who has some other business. An agreement is made, whereby the owner of the 300 takes care of the 200 colonies not his own. This seems to be done to a considerable extent in Colorado. But, say; knowing what I do about bees being kept on shares I think I should prefer to buy my neighbor's colonies if I could, and then pay for them out of the proceeds that I might derive from those very same bees. But here is the rub! Bees pay in Colorado, and probably the other fellow would not sell; and then the only thing that can be done is to run the bees on shares. I am not sure that sharing equally in losses as well as gains is an equitable arrangement.

I should be glad to hear from any one of a legal turn of mind who has had experience in a matter that has occasioned no little controversy and bad feeling. If there *is* an equitable plan whereby all disputes may be avoided, let us by all means have it. Furnish us with a form of contract that will be iron-clad, and afford full protection equally to both parties. Let it be stated in legal phraseology, and be so clear and fair that no trouble *can* arise.—ED.]

SWARMING.

1. Do bees always swarm in a good season if strong enough to do so, even if late in getting about it—old swarms I mean?

2. If an old colony swarms out several times, and goes back, is it a sure sign that they will swarm some time that summer? I had some act that way, but divided them after they had swarmed out twice.

3. Do after-swarms ever swarm the first summer?

4. If an old swarm sends out a prime swarm early in the summer, and no after-swarms, and has most of its winter stores still left in the hive after sending out the swarm, will it send off another prime swarm later on in the summer? or do old swarms ever send out more than one prime swarm in a summer?

ANITA A. BYERS.

Entiat, Wash., Dec. 12.

[1. It depends on how good the season is, and somewhat on the bees and the size of hive. Ordinarily, with a good honey-flow, an eight-frame colony is pretty sure to cast at least one swarm.

2. Do not let them do it. If they swarm out more than once, and continue to swarm out, and go back, the probabilities are that the queen is not able to fly. During the interim from one swarming-out to another, the bees will be pretty apt to fool away their time, gathering little or no honey, and sulking, probably because they can not have their own way. After they have attempted to swarm out three or four times they will be liable to kill their queen; and when the virgin is able to fly, they will swarm out and stay out.

There is no sure sign about swarming. If a colony attempts to swarm out once, and if, a few days afterward, tries the act again, I would divide it, or else see what is the matter with the queen; or perhaps, better still, take away all frames of brood, and give it frames of foundation, leaving them their super, if they have one, in which they are storing honey.

3. Yes, sometimes; but, of course, this is not the rule. The parent colony is liable to give off after-swarms at the going-out of each virgin queen on her wedding-tour.

4. This is a question that I can not answer. If the honey-flow continues, it might send out a second swarm, probably weaker than the first. If the honey-flow stops, then you may set it down as a rule that all swarming will stop, although there are exceptions to even this rule. Sometimes the bees get such a craze for swarming that, even after the honey-flow is stopped, they have so far lost their heads that they are bound to carry out their

desires, honey or no honey. Bees will do foolish things as well as human beings.—ED.]

JAPANESE BUCKWHEAT; REPORT IN PROSE AND POETRY.

You know I bought some Japanese seed of you last year. I sowed a part of it in the spring, and the rest in July. Both crops did remarkably well, but I think the late crop made the best growth and yield, for I never saw such a crop of buckwheat grow. It was over 4 feet high, and the largest straw I ever saw. It filled remarkably well, for it could not have had any more grain on it, and it went flat to the ground after it was ripe with the weight of grain it bore. Well, where do you suppose I got my profits? I will tell you.

The bees got the honey,
The chickens got the wheat,
And I got the straw,
And lots of eggs to eat.

I believe it would have yielded 50 bushels to the acre if it had stood up and been harvested; but I had only a fraction of an acre.

Summertown, Tenn. F. A. FINCH.

SMOKER FUEL; HOW TO AVOID SMOKER DRIPPINGS.

I want to say just a word in regard to the drippings from the smoker. I believe the manufacturers and most of the dealers have told us to use dry sound hard wood. I have always used dry punk wood, sawed up about half an inch square, and three or four inches long. I get a log every year, usually poplar or maple; take it when it is white, and soft enough to break, and keep it where it is dry. It can be easily lighted with a match, never goes out, and I usually get through the season with about a barrelful of the punk, and I have never had a drop from my smoker in all the years I have used it. I have sometimes used sound wood when I got all out of punk, and had noticed the drippings. I am well aware that all bee-keepers can not get this most excellent fuel readily; but all who can should try a little; and I venture to say they will never use sound wood if they can get the punk. Another advantage, it makes a much better smoke, and more of it, and the smoker does not get nearly as hot. JAMES WOOD.

North Dana, Mass., Jan. 12.

NECTAR OF VEGETABLE ORIGIN.

Is nectar a vegetable or an atmospheric production or both? 1. If vegetable, why do we often find the bees starving when the fields are white with clover bloom? 2. If atmospheric, why would it not form on the house or fence as readily as in the flowers? 3. If both, what are the essential conditions of the two to cause secretion in the flowers?

W. B. RANSON.

New River, Va., Feb. 12.

[Nectar is of vegetable origin. It could no more come from the air than could corn that depends equally on the atmosphere for its growth. But atmosphere does have something to do with the secretion of nectar, but only in the sense that it may bring about a favoring condition.—ED.]

THE PEAR-TREE PLANT-LICE.

In reply to Mr. Greiner's questions, Dec. 1, p. 881, I will say that the insect is undoubtedly the pear-tree *Psylla* (*Psylla pyricola*). The psyllids are sometimes called jumping plant-lice because of their habit of jumping when disturbed, and at the same time taking wing; the specimen from which Mr. Greiner made his drawing was immature. In a few days it would have cast its skin, and come forth fully fledged.

This insect excretes from its body a large amount of sweet liquid which is as truly honey-dew as the secretion from a plant-louse. When these psyllids are abundant on the pear-tree they do much harm, sapping the strength of the tree. The foliage, vegetation, or other objects beneath such trees become completely covered with the honey-dew which bees, ants, wasps, and flies seek as food.

C. P. GILLETTE.

Fort Collins, Col., Feb. 5.

HOW TO BLEACH TRAVEL-STAINED COMB HONEY.

It may interest you to know that, since opening my honey business for the season at this location, I am again making practical use of my plan for bleaching discolored combs. There is no question as to the feasibility of the scheme, and I hope (if the time ever comes when I have an hour of respite from business cares) I shall find time to give at least a brief description of the same for the benefit of your readers. B. WALKER.

Chicago, Jan. 7.

[Mr. Walker is a very busy man, and penned the above at the end of a business letter. This gives enough so any one who is interested can experiment for himself. In the meantime we hope our friend will have time enough to go into the methods of bleaching a little more elaborately.—ED.]

CEDAR FOR HIVES.

Will you please let me know whether or not cedar is offensive to bees inside of the hives? Will it drive them out of the hive?

Ft. Jones, Cal. E. G. GERBRICH.

[So far as the slight odor of cedar is concerned, it would be just as good for bee-hives as white pine. While, of course, it is not as good timber, no fear need be entertained that it will drive bees out of a hive made of such lumber.—ED.]

COLORADO AS A PLACE FOR HOME-SEEKERS.

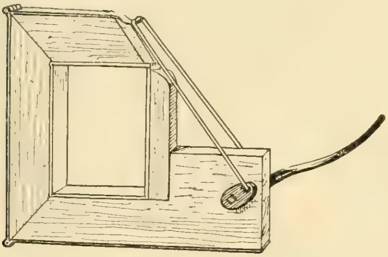
On page 90, Feb. 1, you give very good advice to J. S. W.; but I should like to add a little. Many sections of Colorado I find are better adapted for residence of consumptives than Denver and Colorado Springs—too much smoke and wind in those places. After seven years' residence in Colorado Springs I am now at Ignacio, a much more delightful climate than the above—superior both summer and winter. There is now open for settlement here, for homesteads, many thousand acres of very rich land, unsurpassed for alfalfa, timothy, wheat, oats, barley, rye, apples, pears, plums, grapes, and other fruits. Water-canals for irrigation will immediately be constructed—in time for this summer's crop. As soon as this fact becomes known the land will soon be occupied. To homestead, 50 cents per acre cash is required, and one dollar per acre on final proof to procure patent. Room for bees here, but it will certainly not pay to bring bees from Iowa. S. W. MORRISON.

Ignacio, Col., Feb. 7.

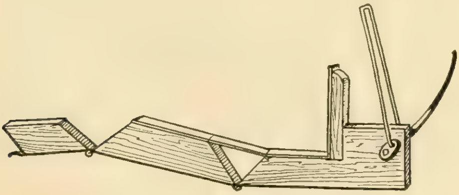
[Dr. Morrison is an old correspondent of years gone by. If he is connected with any real-estate boom of any kind I am not aware of it. But in any event, no one should go into any new field like this, taking his whole family. He should write to as many as possible, then go alone to prospect.—ED.]

BLACK'S SECTION FOLDER.

I here show you two drawings of my section-folder, one open, the other one closed on section finished for use. I am satisfied it will excel any other I ever saw. The machine weighs 2½ lbs. I also have a machine that will fold 4¼×4¼, 3⅝×5. I think it is almost impossible, by fair means, to break a section by folding, as the machine is bound with steel hinges around each side. The dovetail is pressed together firmly by the yoke and eccentric lever, as shown in cut. After it is closed it leaves sections square, not oblong.



To operate, raise the yoke as in the first view. Lay the machine before you on the table. Lay in the piece to be folded, as shown in No. 1. Then take the left hand and bring up the left end of the piece to be folded over the top. Catch the yoke on the hook on top; with the right hand press the lever down. It's all complete. Raise the lever to disengage the hook. The press adjusts itself for the next. I feel confident a child can operate it perfectly.



It's quick, but not cumbersome—no breaking sections. It leaves them square.

Greenville, O., Jan. 30. HENRY BLACK.

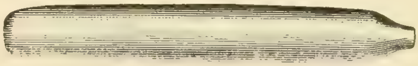
[Your folder would no doubt give good results, but it would be slow in action.—ED.]

DOOLITTLE QUEEN-CELLS; STICK FOR FORMING THEM.

I see in your last issue of the A B C of Bee Culture, directions for making queen-cells by the Doolittle plan. While it is very plain in most parts, yet as I have no rake to take a pattern of a tooth from, I should like to know the proper thickness of the stick that is used in forming the cells. W. C. EVANS.

Fort Collins, Col., Jan. 2.

[In general it may be said that the cell-stick should be made to fit snugly into the bottom of a queen-cell made by the bees. The majority of the queen-cells are built off from a worker-cell after cutting it down, so that the lower end of the stick should be somewhat smaller.



The general construction should be something like that shown in the accompanying picture.—ED.]

TAKING OUT QUEENS TO KEEP BEES FROM SWARMING.

In Jan. 1st GLEANINGS, p. 18, Mr. N. C. Alford speaks of taking out the queens to keep the bees from swarming. What is the meaning of that? Does he mean cut out cells? H. D. HOPKINS.

Indianapolis, Ind., Jan. 4.

[Mr. Hopkins refers to the method in use by P. H. Elwood and others, by which queens are removed or caged just at the approach of the swarming season, all cells being cut out in eight days after caging; and, as a rule, again in eight days. Colonies without queens will not swarm.

The cells are cut down in eight days to prevent the hatching of young queens, which would be almost sure to lead forth swarms at their first wedding-trip. It involves a large amount of work; but the advocates of the plan say, that, in addition to preventing swarming, it also prevents the rearing of a lot of brood and bees that will be useless consumers later on. This plan you will find described in our A B C book, under the head of "Swarming;" sub-head, "Prevention of Swarming by Caging."—ED.]

IDEAL SECTIONS AND THE FENCE.

I got 10 hives of you last year, with plain sections 3⅝×5×1½, and fence separators, some time in June. I put an extra large swarm in a 10-frame hive, and by the middle of July I took off the super of 35 sections of No. 1 honey, and there were only about 5 that were not filled to the side of the section. I sold it right away to summer resorters around Harvey's Lake for 10 cts. apiece, which brought me $3.25. This, I thought, was good enough, and there was not one section burr-combed fast to the fence. That size of sections and fences has come to stay.

GEO. P. ANDERSON.

Ruggles, Pa., Jan. 31.

WHEN TO FEED BEES IN THE SPRING.

About what time in the spring of the year would you advise feeding bees to give them a good start for spring or early brood-raising? And about what amount should be fed? Is it safe to open up hives in winter?

Bloomfield, Ind. W. S. BOGY.

[I would not advise feeding to stimulate until settled warm weather has come, and that, of course, will vary in different localities. I would feed half a pint to a quart daily. The Doolittle feeder, or any feeder that can be set down inside of the hive, can be used. I would under no circumstances feed liquid food on cold days, and would especially caution against feeding at any time too early in the spring. For example, there may be a week of warm weather followed by very cold weather. Feeding during the first period would start brood-rearing, and do a great deal more harm than good, because the bees would during the cold spell attempt to hover over the brood, with the result that they as well as brood would die, and a large portion, if not the whole colony, perish.—ED.]

SHADE, AND ITS RELATION TO CLUSTERING OUT.

Two years ago I ran a yard for Mr. Ewing, of 100 stands, all in the shade of three-year-old cherry-trees and old apple-trees. My own yard of 9 stands was without a tree, but I took old scrap lumber and made shade-boards 4 ft. long, 3 ft. wide, with a wind 18 in. wide extending down the west side of the hive which faced south, laid two on the hive-cover shade-board, then with about the same space between the side of the hive and wing. Result, when bees in orchard would cluster all over the hive, mine with shade-board never clustered.

Des Moines, Iowa. A. MASON.

THE TALL SECTION A BETTER SELLER.

I have used the 4¼×4¼ section, but did not like it. I rigged up a foot-power saw and cut out some boxes to suit myself, 4¼×5, and 1¾ thick. I used them without separators always, and sold them by weight. They were much better filled than the smaller sections, and many were perfect, and would compare well with any I have seen illustrated in GLEANINGS. No one would buy the square box when seeing them side by side. The 4×5 may be all right; but when you get them narrower you are going wrong again. C. E. WATTS.

Rumney, N. H., Jan. 19.

HONEY FROM THE TEA-PLANT.

The tea-plant is now in bloom, and furnishes quite good pasture for the bees. Tea honey is highly esteemed by the Chinese. The plant is a species of camelia, and has a large white blossom with a center of very many yellow stamens. J. E. WALKER.

Shao-wu, Foochow, China, Nov. 22, 1899.

BEGINNERS' QUESTION BOX

BY E. R. ROOT.

H. J. B., Pa.—The sample drone you sent is evidently the son of a fertile worker or laying worker; or he may have been from an egg laid by a drone-laying queen in a worker-cell. Such drones are not necessarily incapable of performing the function for which they were intended; but as a rule we prefer drones from a mother capable of laying eggs that will produce workers.

A. B. D., Mich.—I can not see any reason why your bees should be robbed without trying to defend themselves. I should be inclined to think the trouble was with your bees. If they are pure blacks they might not offer resistance; but if they are hybrids, or, better still, Italians, they ought to put up a good defense. In any case I would contract the entrance down to a space that one bee can pass through at a time. If the bees still fail to show fight, shake in a few young bees of another hive of Italians.

C. H. L., Fla.—We have yours inquiring if we could not make a smoker of sheet brass. I presume the reason you suggest such a metal is because your climate is so very moist with salt air, as it is called, that it rusts articles made of iron or steel. We once made for O. O. Poppleton, of your State, a smoker of copper; but one objection to this metal is that it is pretty soft, and is liable to dent up rather badly. Yes, we could make you a smoker of brass, but it would cost from 25 to 35 cents more.

G. A. D., N. Y.—I would not be too sure that the colony is queenless. During the winter, queens stop laying and then shrink up so much in size that they look almost like the worker bees themselves; and a beginner looking through the hive, and seeing no evidence of eggs or larvæ, and nothing that looks like a queen, is apt to conclude that the bees are queenless. Of course, if you know that the queen is dead, then the sooner you can introduce another queen to the bees the better it will be for them; but it would be a little difficult at this time of year to get a queen through the mail alive, owing to the sudden changes in the weather. We could not send you a queen from here, as we take no queens from our apiary during the winter. One would have to be sent from the South, and you would have to run your chances of getting her through alive.

W. A. C., Ct.—I would not advise you to buy a nucleus with a queen, and place the same among other bees, even if the other queen has been removed. In the first place, you had better not do any thing with the bees until next spring, or until you have settled warm weather. Tinkering with them now would be sure to do more harm than good. When settled warm weather comes on next spring, send to some breeder for Carniolan queens, and introduce them, following the directions given on the cages. You might be able to look over the frames of your colonies during this winter when the bees fly; but we would not open the hives unless the temperature was at least as high as 65 degrees Fahrenheit. Bees fly on quite chilly days; but at such times it would be very unwise to open the hives.

H. L., B. C.—When running for comb honey it is hard to prevent swarming, although many of the inconveniences attending it can be very greatly reduced. I would by all means have the queens' wings clipped; then I would hive the new swarms, if first swarms, in an empty hive on frames of foundation, or empty comb, on the old stand, and place the super on the new hive now on the old stand. The other colony I would place in an entirely new location, which transfer will have the effect of reducing the parent colony so much in strength that there will be no further swarms from that one. If you can not get around to clip all the queens' wings in spring, put perforated entrance-guards over all colonies having unclipped queens. It is a good time to requeen during swarming time, and all colonies with young mothers will be less liable to swarm. The best bee-keepers do not keep queens, ordinarily, more than two years for service, and some go so far as to requeen all colonies with young ones where the queens are more than one year old. But the giving a colony a young queen will by no means prevent swarming, although it may have a tendency to discourage it.

E. L., Victoria, B. C.—I would refer you for answers to your questions regarding the ocelli to Cheshire's works, "Bees and Bee-keeping," two volumes. The first named is scientific, and the other practical. The prices of these are $2.50 for Vol. I., and $3.00 for Vol. II., postpaid. I would also refer you to book entitled "The Honey-bee," price $1.00 per copy postpaid. The last named is by Thos. W. Cowan, editor of the *British Bee Journal*. I could not give you any idea of the amount of pollen used by a colony during the year. Conditions would vary so, and so much would be used before it was stored, that it would be difficult to give even a rough guess. You can procure a set of large illustrations of the bee, such as could be held up before an audience, at the office of the *British Bee Journal*, 17 King William Street, Strand, London, England. Yes, we have any number of the glass dodecahedron paper-weights, and can supply them to you at 15 cts. each postpaid. With regard to the A B C of Bee Culture, I would say that it is a *cyclopedia*, and from the very nature of the case it can not be arranged so that one subject leads up to another. Any one who buys a cyclopedia is not expected to sit down and read it from beginning to end. It is arranged in alphabetical order for the purpose of reference. Beginners who desire the A B C should first commence with "Bees;" then take up in their order Hives, Hive-making, Swarming, Absconding Swarms, Comb Honey, Extracted Honey, Robbing, and Wintering. The other subjects may be taken up in the order that they suggest themselves.

EDITORIAL
BY E. R. ROOT

EIGHT extra pages this issue.

THE manufacturing interests under the name of E. Kretchmer, of Red Oak, Iowa, have recently been made over into a capital stock company of $25,000, $18,000 already having been paid in. Their line of business will be the manufacture of steel and wooden tanks, hives, and other bee-keepers' supplies, the same as heretofore carried on by Mr. Kretchmer. We offer the new company our best wishes and congratulations.

HOW THE BEES ARE WINTERING OVER THE COUNTRY.

MARCH this spring "came in like a lion," but on the 8th and 9th it warmed up so we had a chance to go through our bees. We have something like 250 colonies on their summer stands, packed in double-walled hives. So far there has not been a single one lost; and, what is of more importance, our apiarist says they are stronger and more vigorous than he ever saw them before, for he says he doesn't think there is, on the average, to exceed a loss of 100 bees to the colony. Reports over the country so far indicate similar good wintering, and bee-keepers have great reason to feel rejoiced. A year ago at this time, heavy losses were reported everywhere, and our own bees suffered more severely than at any time since the severe winter of 1881–'82.

THICK ALFALFA HONEY.

TALKING about thick honey, the following domestic scene is a case in point. We were seated at the table when Mrs. R., looking at me, said:

"Please pass me some of that alfalfa sweet-clover honey which you say is so nice."

"Certainly," I said; and with that I elevated the dish, honey and all, by the handle of the spoon. Of course, Mrs. R. looked horrified, and ejaculated:

"Oh! please be dignified. You are setting a bad example to our son."

"Fudge!" said I. "I wanted to show you both how thick and nice that honey was. If I can take up the dish, honey and all, by taking hold of only the spoon that is dipped in the honey, pass it across the table, the honey must be thick. See?"

Mrs. R. didn't see. I find you can't make a woman see if she is not so inclined. In this case my better half saw in her mind's eye a vision of an overturned dish and her "nice clean table-cloth" all daubed with honey.

After I had made a few more gyrations of the aforesaid spoon with its honey and dish, much to the merriment of the boy and the mortification of his mother, I set the whole thing down right side up with care. One pair of eyes twinkled and the other pair snapped and I stopped.

This honey came from Arizona; and if I had to wait for it to run out of an inch bunghole in a barrel, I am afraid my patience would be worn out. But, say; the honey is good. But let me tell you that sweet clover mixed with alfalfa gives it a sort of hoar-hound flavor, and at the same time darkens the color slightly. For this, day after day I am inclined to think I should prefer the alfalfa alone; but for occasional use, alfalfa and sweet clover mixed are very pleasant.

THE LANGSTROTH MONUMENT.

IT will be remembered that, some time ago, the editors of the various bee-journals endeavored to raise a fund to erect a monument to Langstroth; but in spite of our combined efforts that fund did not go much higher than $100. Soon after, the General Manager of the United States Bee-keepers' Union, now the National Bee-keepers' Association, feeling as we all did that the fund was very small, again took the matter up, with the result that he has raised the amount to something like $275; and this, it is believed, will erect a very satisfactory shaft.

Some time ago I took it upon myself to ask our bee-keeper poet—the same man who has succeeded in raising the fund to a fair sum, to suggest an inscription that would be suitable to be placed on the monument. In response to that request, Mr. Secor drew off the following:

INSCRIBED TO THE MEMORY OF
REV. L. L. LANGSTROTH,
"FATHER OF AMERICAN BEE-KEEPING,"

by his affectionate beneficiaries in the Art; who, in remembrance of the services rendered by his persistent and painstaking observation and experiments with the Honey-bee, his improvements in the Hive, and the charming literary ability shown in the first scientific and popular book on the subject of Bee-keeping in the United States, gratefully erect this monument.

Rest thou in peace. Thy work is done.
Thou hast wrought well. Thy fame is sure.
The crown of love which thou hast won
For useful deeds shall long endure.

I have read this over a number of times, and it seems to me it is very appropriate, and very carefully worded. If any one can offer any suggestions, I am sure they will be appreciated by Mr. Secor, and by the friends of Mr. Langstroth who have contributed toward this monument.

I presume the order for the monument will be given very soon now; and when the same is completed, GLEANINGS would respectfully request a photo that it may present it to its readers.

THE PURE-FOOD CONGRESS.

THE National Pure Food and Drug Congress is now in session in Washington, D. C. There was every indication that there would be a large representation from all over the United States, and there are now strong hopes that the Brosius pure-food bill will finally become a law, for it seems to be regarded favorably in both the upper and lower houses. Men of all trades and professions, in the interest of pure food and drugs, are represented in the congress.

The National Bee-keepers' Association is represented by Rev. E. T. Abbott, of St. Joseph, Mo. At the previous congress he made a distinct impression, as is evidenced by the fact that he was recognized and placed on important committees.

But it will not be wise to assume that the pure-food bill will finally become a law, as there will be a strong pressure brought to bear against it from the glucose-mixers, and by the food and drug adulterators all over the country. Every bee-keeper, at least, should write his Senators and Representative, urging their support of the bill that will soon come before them. In matters of legislation of this kind, it is never wise to assume that the "other fellow" will do the writing. We have a *representative* government, and our representatives in both the upper and lower houses desire, more than any thing else, to know the wishes of their constituents.

GRADING BY PICTURES.

WHEN I attended the convention of the New York State Association of Bee-keepers' Societies at Geneva, President W. F. Marks, at one of the recesses, handed me a photo showing the grading that the Ontario County bee-keepers had adopted. At the time of doing so he explained that the photos that Mr. Niver had prepared at the direction of the State organization were not entirely satisfactory, because there was so little difference between "fancy" and "No. 1" grades. Indeed, some thought his No. 1 was even *better* than his fancy. As long as there was a chance for difference of opinion it seemed to Mr. Marks and his friends that another photo should be prepared showing the poorest specimens allowed in each grade.

Niver's grading is shown on page 393 of our May 1st issue, 1899, and the grading-card given to me by Mr. Marks is herewith reproduced.

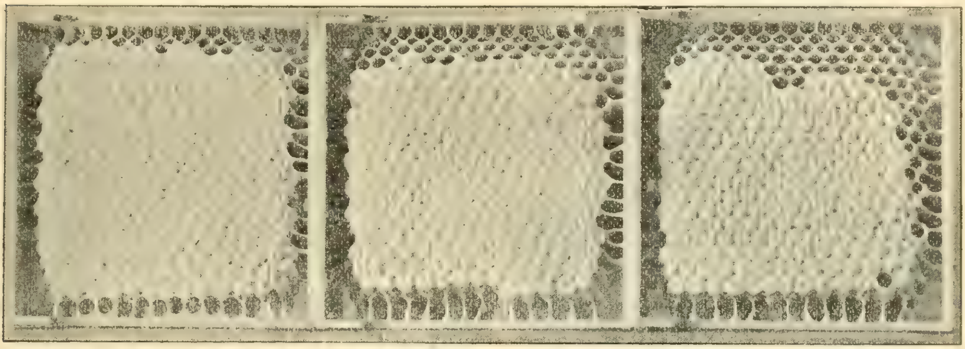
It must be borne distinctly in mind that each specimen in the grade above shown is the poorest allowed for that grade. In other words, a section that would grade "fancy" may have a line of unsealed cells next to the wood; but it must be of standard weight, of uniform cappings, and without discoloration or travel-stain; but a section may have every cell sealed, and in appearance be a better and a prettier one than the one shown in the engraving for fancy, but, according to the rule, must be put with the fancy. While it might seem that there ought to be a grade for "extra fancy" to take in sections having every cell sealed, yet there are so few of such sections generally that it does not seem best to have a higher grade.

As to the next lower grade, when we come across a section that is better than No. 1, but not quite equal to fancy, then that should be put in the No. 1 grade; and the same rule would hold true of sections under consideration for No. 2.

I suppose nine readers out of ten will say just as I did, that the sections shown below are upside down; but Mr. Marks assured me that this was the way they came from the super. If you look very closely at No. 2 and the No. 1 you will see there is a dip to the cells.

There is just one difficulty with this picture-grading. It is very difficult to select three sections, the poorest of their grade, each of which shall be an average of the poorest. For example the No. 1 and No. 2 below, for instance, are rather unusual in that the first few rows at the *top* instead of the *bottom* are not filled out. As a rule the exact opposite is the case.

It will be seen that the sections above are of the slotted or beeway sort. In this matter of grading it will not do to grade square sections by tall ones; and neither would it do to grade the beeway from plain ones. The conditions of size, shape, and general appearance, should be as nearly alike as possible, so that the only item to be considered is that of the honey itself.



GRADING ADOPTED BY NEW YORK BEE-KEEPERS.

One scarcely realizes how much an outside condition has to do in affecting his judgment. For example, of two combs equally well filled, an admirer of a tall box will give his preference to the honey in that box, scarcely realizing that his choice was based on the *shape* of the section rather than by its filling.

W. L. PORTER, ONE OF THE SPECIALIST BEE-KEEPERS OF COLORADO.

On getting off the train at the Union depot at Denver, and not seeing any one whom I knew, I made some inquiries as to how to get to the State Capitol, in which the Colorado bee convention was being held. As I was about to take the car, some one called out in familiar tones, "Hello, Ernest! here we are!" The speaker was R. C. Aikin, the President of the Colorado State Bee-keepers' Association. He had with him Mr. W. L. Porter, to whom I was then introduced. We three boarded a car, and were very soon ushered into the convention.

It was my very good fortune to be entertained at the home of the gentleman I have just named—Mr. Porter—during my sojourn in Denver. If there is a family in all Denver who know how to entertain a bee-man, and to do it right royally, it is the Porter people, every one of whom is a bee-keeper, from the youngest up. Mr. Porter's family consists of wife and three children, the oldest 18 and the youngest 14; and before I tell you very much about these people, I wish to introduce them to you. After some persuasion (why is it that bee-keepers are so provokingly modest?) I got the family out on the front lawn in the morning, and, at this time, there was with us Mr. J. E. Lyon, of Longmont, another specialist, and of whom I shall have something to say at another time. I got them out on the lawn as best I could, and pressed the button. The result, shown on page 212, is not all that I could desire, but fairly good for the conditions. The sunlight of early morn is not altogether the most favorable; but as the girls were to be away at school I determined to have a shot. With a good deal more arguing I finally succeeded in getting permission to use the picture after it was finished.

I said that every member of the family was a bee-keeper. Mr. Porter is what may be called a specialist bee-keeper in the strictest sense—that is to say, I take it that his sole means of livelihood is derived from bees. He has had as many as 700 colonies, but I believe he is now operating only 500, located in five or six different apiaries. He produces both comb and extracted—about an equal amount of each. In extracting, his daughter Mary, the oldest, the one shown in the center of the picture, runs the extractor, while her father and brother bring in the combs and do the uncapping. The younger daughter helps her mother, and occasionally both assist in the yard when the bees are especially crowding.

Mr. Porter has had a varied experience in bee-keeping. Born in West Virginia in 1850, he migrated with his parents northward to Michigan in 1864. His parents assumed the life of pioneers, clearing off the forests. Young Porter, with the rest of the boys, was detained from school to help the father, and the consequence was their early school advantages were limited.

Mr. Porter's first introduction to bees was not unlike A. I. Root's first experience. A colony of bees was flying overhead where he was cultivating. This was too much for the boy. Cultivator and horse were left in the field, and the bees were pursued. They were tracked to a maple, where they clustered fifty feet above the ground. But this was no obstacle—not the least. A man or boy whose heart is on fire with enthusiasm will not stop for a little circumstance of this kind. How young Porter managed to get to the bees, and get them down, is not important, but the bees were brought home in triumph. However, during the next winter (a severe one), they died. But this, instead of dampening his ardor, fired it up to the highest point. It is this element in his nature (enthusiasm, and ability to overcome obstacles) that has made him the successful bee-keeper that he is.

W. L. PORTER.

In a short time afterward we find him at the Michigan Agricultural College, under Prof. Cook, as a student. His general aptitude for the bee business resulted in his being placed in charge of the apiary of the Agricultural College. He used well his opportunities, and finally became the possessor of some bees of his own. He suffered many reverses, but made the bees of some assistance to him financially in helping him through college. Ill health and a lack of funds finally compelled him to give up his course before he had completed it.

He subsequently drifted to Wisconsin, and formed a partnership with Miss Allyn—a partnership which he says was "very happy and successful." He soon engaged in bee-keeping again, meeting with his usual success. But again ill health caused him and his wife to move to the land of gold, sunshine, and alfalfa honey, in 1881, and here he has cast his lot and his fortune ; and if I may judge from general appearances he has secured a fair share of the sunshine, of the alfalfa honey, and the gold which it brings. A man who knows no obstacles too great to overcome, richly deserves this success.

While at the Porter home I was delighted with the graino coffee, and subsequently learned that it is a honey coffee that Mr. Porter himself prepares. The flavor was so delightful that I finally asked for the recipe for making, and this Mr. Porter has kindly given me as follows :

HONEY CEREAL COFFEE.

5 lbs. fresh wheat bran; mix with 2 lbs. rye flour, 2 lbs. alfalfa honey. Mix honey with 3 pints of boiling water. After the honey and water have come to a boil, pour into the bran mixture. Stir thoroughly, and knead to a *stiff* dough; put through a domestic meat-grinder to separate them. Dry in a warm oven. Brown the same as coffee. For a coffee flavor, add two pounds *best* Mocha and Java. Have it all ground and put in air-tight cans for future use.

I am not very fond of strong coffee ; but this graino honey drink is one of the best that I have ever sampled. I suggested to Mr. Porter that as he had, in the estimation of his friends, made up a better graino coffee than any of those on the market, he should advertise and sell the same as alfalfa-honey coffee. "No," said he, "I have something else to do. I will give you the recipe, and you can give it to the bee-keepers."

Bee-keepers are fond of "taffy"—that is, providing it is the right kind. Miss Mary Porter is an expert in "taffying up" bee-keepers—at least that which I received was some of the nicest I ever tasted. It is made of alfalfa honey. Her recipe for making is as follows :

HONEY TAFFY.

Boil extracted honey until it *hardens* in cold water. Pull until white. Any quantity may be used. One pound requires about twenty minutes' steady boiling.
MARY C. PORTER.

Whether there is something in the pulling or in the boiling, or in that delightful alfalfa honey, or in some other peculiar method of handling, I can not say ; but the honey taffy that I tasted at Mr. Porter's is certainly the best I ever tried.

Mr. Porter, at the time of sending the other recipes, sent one also for fastening labels on tin. It is as follows:

RECIPE FOR HONEY PASTE FOR PUTTING LABELS ON TIN.

Take two spoonfuls of wheat flour and one of honey ; mix the flour and honey, and add boiling water to make right thickness. This is fine for labels or wall paper where paper will not stick with ordinary paste.
W. L. PORTER.

Mr. Porter's method of marketing his crop is best told in his own words. He writes :

I have had a local market for all honey. When I came to Colorado all the honey in market was from California. My honey sold readily at 25 cts. in a wholesale way—i. e., to the grocers, for comb, and 20 cts. for extracted. Honey for our local trade I put in ⅓ and ½ jelly-glass and one pint Mason jar, but sell a great deal to customers in gallon and half-gallon pails, and in five-gallon cans with screw tops. The last three years I have marketed most of my comb honey through our honey association.

OUR HOMES,

BY A. I. ROOT.

Consider the lilies of the field, how they grow; they toil not, neither do they spin; and yet I say unto you that Solomon, in all his glory, was not arrayed like one of these.—MATT. 6:28, 29.

I have thought best this time, dear friends, to give you a glimpse of *other* homes. I was impressed to do so on account of the many exceedingly kind letters I have had since I became interested in flowers, and the flowers that grace and brighten the homes where GLEANINGS goes on its semi-monthly visits. First we will read a letter from a home in North Carolina:

Dear Mr. Root:—For some time past I have been reading with pleasure of the interest you are taking with flowers. I am glad you are finding them interesting and lovable. I regard them as little missionaries sent from God to teach us beauty, purity, and innocence. Perhaps you have read Mrs. M. Crawford's essay on pansies. I have, and think it beautiful. Surely the flowers have a mission to perform. And have you noticed that lovers of flowers are generally lovers of goodness and purity in other things? I do not remember knowing any true lover of flowers that was a real mean person. Still, I know some fathers of families who deny their children the use of a wee bit of ground for flowers, when perhaps these same fathers own hundreds of acres, because "they are not fitten to eat or to wear."

Well, our home is a poor and humble one; but the friend or stranger passing our gate is quite sure to see flowers in season; and our little ones are encouraged to love and care for the flowers.

Roxobel, N. C., Feb. 26. MRS. GEO H. BARNES.

After I had spoken of my forcing-bed, and of how much pleasure it gave me, there were many inquiries in regard to making a forcing-bed to be placed in a window in the average home. In our last issue I tried to tell you how to make something of the kind. In order to confine the air so as to keep the sand and cuttings moist and damp, tops and foliage as well as roots, it occurred to me a little bell-glass or vase inverted over the plant would be just the thing. Then I got to thinking that, for very small cuttings, a glass *dish*-cover would do very well; and if the edges set down into the sand it would make it perfectly tight. In looking around the store I found some cheap glass butter-dishes, and I have already taken one of these, filled the lower part with sand, put in it some cuttings, and it seems to answer the purpose perfectly. While visiting my sister a short time afterward I saw that she had inverted a fruit-jar over a coleus that did not seem to thrive in the dry air of the home as it did in the damp air of my own greenhouse. Then I was reminded by the following letter that I had not really struck on any thing *new* after all; and so we have something from a home away off in Nebraska:

Mr. Root:—I am very much interested in house-plants—have a bay-window full, blooming now. I have just started slips, for beds, in tin cans. I put about half a dozen small ones in each can, and cover with a tumbler. They commence growing right away, and I hardly ever lose a slip. We find your Home talks very interesting. MRS. JAY WILLEY.

Mead, Neb., Feb. 28.

And now we have something from a home away off in Quebec:

Your account of the coleus makes me wish to try to raise some from seed. I have one now, but a very dark one; but there is a beautiful one in the house, owned by my sister-in-law, which reminds me of the one you describe; but the colors are not the same. I only wish I could tell you about it. The old leaves change in color, and the young leaves are again very different. All have a golden edge.

Kingsey, P. Q. MRS. J. C. EVANS.

The jadoo fiber, of which we have been furnishing samples, is perhaps the best thing in the world to start seeds of coleus or any similar plant where the seeds are very small. The same forcing-bed or dish I have been talking about is what is needed. I think I would make the jadoo about half sand. Mix it with a sieve, then pack the surface down smooth with a little bit of board. Now sprinkle your seeds very evenly over the surface, taking quite a little time to do it carefully, because if you get too many in one place your plants will be greatly crowded. After the seeds are scattered on the surface, get them into the ground by carefully sprinkling with a fine spray, something as women sprinkle clothes. Do not let any big drops of water fall on the surface, for it would throw the seeds out of place; but get on water enough to make the jadoo and sand as wet as mud. If you manage just right, the sprinkling will sink the seeds fully as deep as they need. Then put on your cover (a pane of glass, a glass tumbler, dish-cover, or whatever it is), so as to keep the jadoo moist and damp. Set the dish where it can have as much sun as possible; and when the sun does not shine, the plant should be kept quite warm, say between 70 and 80, or so the dish or soil will always feel quite warm to your hand. In this way we secured some 200 or 300 coleus-plants from one paper of seed. The same treatment you give cuttings to make them grow will cause any seed to germinate in very much less time than it would in the ordinary way. After the plants come up give them air gradually, and do not keep the soil quite so wet. After you get the knack of it, it is really astonishing to see how cuttings, seeds, and every thing else will grow and thrive under the influence of air, warmth, and moisture. When the little plants begin to crowd each other, put them in the same jadoo and sand in little pots. I prefer the very smallest size of thumb pots to start with; and when you get every thing to working right, in three or four days these little thumb pots will be packed full of roots; and it is just fun to give them more room as fast as they demand it.

Some will say this is too much fuss and bother, and will suggest putting them in a larger pot, so as to save so much shifting. But your plant will grow twice as fast if you commence with a small pot, and shift it gradually to larger ones. Besides, these little pots take ever so much less room. We have some little boxes to set them in. See description in our last issue. A whole dozen plants can be watered all at once by simply dipping the box, pots and all, in a pan of water and then lifting them out again.

And now we get the following excellent suggestions from a home in Pennsylvania:

My dear Friend:—How delighted we are with your flower talks! I read every word of it to Mrs. L., and she said when I read last GLEANINGS, "Oh if we could visit Mr. Root, and see his new pets!" Yes, Ernest caught you just right. How thankful we are for that picture! Do continue your delightful floral talks. I never yet met a family who were lovers of flowers but were good citizens, good neighbors, and good friends. When I come into a house where there are plenty of plants and flowers well cared for I feel sure I shall also be cared for and kindly treated, and I never was disappointed thus far. Could you give us some advice on *window* gardening as so many of us have no greenhouses? L. W. LIGHTY.

East Berlin, Pa., Feb. 23.

My good friend L., I have been considering this matter of window gardening, and am making some experiments in that line. Thanks for your kind words.

Here is a short note from a home in Northwestern Ohio:

It beats all how the women-folks take to GLEANINGS since you have gone into the flower business. My wife, mother, and sister all read it now, and before they would hardly notice it. They want you to send them some of that jadoo for growing flowers.

Liberty Center, O., Feb. 26. S. A. PALMER.

The next comes from my own sister, just a few years younger than myself. She is the mother of eight promising children, away up in the northern part of Michigan. She did not send this for print, and may be I shall get into trouble, but I think I will risk it. If that Michigan State bee-keepers' convention (near Manistee) had not been in the winter time, and just when I had a little touch of the grip besides, I should have paid them a visit then.

When I opened GLEANINGS this morning and saw Amos sitting on the edge of a board with his specs at half mast I just shouted. He looked so natural it seemed as though he must hear me and respond as he always does. I should enjoy sitting down among the "posies" with him. My few plants that I have always had by me have seemed almost as dear as my own babies, and I think the poor things feel and show neglect almost alike. I have only one plant in bloom now besides a few hyacinths, and that is a little plant called "Impatiens." How well Amos looks this winter! MRS. C. D. GARDNER.

Manistee, Mich., Feb. 21.

Now, it is a little funny that quite a number have written me in regard to this little plant "Impatiens." At the same time she was admiring her own plant, I had been uttering exclamations of delight over my own. I did not know what it was for quite a spell. I bought it at a greenhouse, but the proprietor said he did not know the name of it, but his wife (who was away) did. It is such a shy, diffident, frail little thing you will almost hold your breath while you look at it; and when the weather becomes warm enough so the shy little *flowers* can break their wax-white covering, and peep forth with such brilliant scarlet tints, no wonder the women-folks fall in love with it. I think it is a relative of the wild touch-me-not, figured and described in the A B C book. The name "Impatiens," I have guessed, came from the fact that the seed-pods could not even be touched when they were dead ripe. Why, somebody told me if you pointed your finger at them, when they were just ready to explode, they would pop and fly all to pieces. Now let me digress a little right here.

In the *American Florist* you will find quite a number of persons who make a business of furnishing rooted cuttings—I suppose mostly to greenhouse men. These rooted cuttings are from 50 cents per 100 up to $2.00 or $3.00 (charges paid by mail or express); and with a forcing-bed like the one I have described I would rather have a rooted cutting than a good many full-grown plants that the catalogs charge 10 to 15 cents apiece for. We grow the rooted cuttings by the hundreds, almost without failure. They take up but little room, comparatively, and the biggest fun of the whole business is to see them grow under your care and skill. Now, I do not know whether these people who advertise want to sell plants directly to retail customers for two or three cents apiece or not; but I will tell you *my* way. I looked over the list, and told them I should like a few of such and such sorts. Then I inclosed 25 cents, and told them to send me as many as they thought proper by mail for the stamps inclosed. So far they have all given me a good many more than I expected, and a good deal *nicer* plants than I expected. And now I come to the whole point of my digression. Some one advertises *Impatiens Sultana*, rooted cuttings, for only $2.00 or $3.00 a hundred. I will here give you the names of two advertisers whose plants have pleased me especially:

C. Humfeld, Clay Center, Kan.; S. T. Danley, Macomb, Ill.

Now I wish to talk a little more about rooted cuttings, or taking slips from plants and making them root if you choose. One day my coatsleeve caught the top of an obconica primula, and broke it off. There were several blossoms and quite a lot of buds. I put it in the sand in the forcing-bed, thinking it would look ornamental among the colei and other cuttings; but it not only looked ornamental, but every bud opened and blossomed as well as on the original plant, and finally took root, so I had a plant in full bloom, potted in a thumb pot. Now, this is not all. The same coatsleeve caught on one of my favorite coleus-plants, and snapped the top off. I stuck the top in the sand. It sent out roots in about four days, and made a *nicer* and more *thrifty plant* than the rest of them that did not have their tops broken off. I have two or three times cut the top right off from a sickly plant that was just dragging along, and it got along better without any roots at all, or without the old roots and old soil that had been bothering it.

Right along in this line let me remark that, some time ago, I paid 15 cents for a mannetia-vine. It was a miserable-looking thing when it came, and, although I tried every way to make it live, it lingered along about two months and then died. In the list of rooted cuttings I saw mannettia-vines listed at 2 cents each. I sent 13 cents for half a dozen. I received *11* nice little plants, and 4 of them were in full bloom when they came through the mail. I put them in thumb pots, and carried them around among the women-folks in the factory, as I do every few days when I have something nice. Well, the fun that little bit of plant made with its brilliant blossoms (something like a honeysuckle), was worth ever so much more than it cost. As soon as Mildred, my little granddaughter, saw one it captivated her at once by its diminutive size. I told her if she would put it in a saucer with a tumbler over it, and keep it warm, it would grow into a big plant.

Now a word about the mission, or, if you choose, the *power*, that flowers exert in this way. Sometimes along in the afternoon, when the girls and women in the factory are getting to be fatigued, I slip in quietly with a little tray of new colei, or may be some plant in bloom. One day I took one of our azalea-plants in a neat new pot, and went through the work-rooms, slipping up quietly so they did not know I was coming. I would choose a stool or chair where I could set my plant down, put it down very quietly, then as somebody turned around to see what was going on I watched the effect of the gorgeous array of bloom, on the sober and perhaps wearied-looking countenances. Many of the younger girls would spring right up from their chairs and hold up both hands. Then I would hear a chorus of expressions like this: "Oh! did you *ever* see any thing so *lovely?*" "Why, Mr. Root, did that wonderful plant actually grow and blossom in your little greenhouse?" The effect all through the room among the men, as well as women, made me think of a spring of cool sparkling water in a desert land. Some of the men-folks would say, "Why, Mr. Root, that plant would please *my* wife better than any thing else in the whole wide world."

And this brings us to the matter of *selling* plants. Here at home, through the letters, the question is asked, "Mr. Root, are you going to sell plants?" Dear friends, I do not believe that God has called me to grow plants for sale. I am too old to go into a new business; and even if that were not the case, I do not believe God wants me to sell them. Through GLEANINGS I will tell you where they may be bought at very low prices. I will tell you how to grow them, and I may possibly give some away to the mothers who read GLEANINGS, just as I am giving away samples of jadoo. Several of the kind letters have alluded to the fact that God has sent flowers to this world of ours to preach needed sermons. They are especially the things to give away. I do not believe much in presents of gold or silver—no, not even at Christmas time; but I *do* believe in giving inexpensive flowers—not cut flowers, but flowers in little pots, that will grow. You can buy little bits of pots for less than half a cent apiece almost anywhere. Then you can get beautiful rooted cuttings for a cent apiece, or may be two or three cents. These cuttings can be multiplied by a forcing-bed or by the use of tumblers and saucers almost indefinitely. You can not only multiply the beautiful plants you have gotten hold of, but you can develop new varieties by selecting a bunch or leaf that shows some new feature or "sport," as it is called. A great deal has been done in developing new and wondrous creations among florists, but I have got just enough insight into the business to feel that there is a great unknown and unexplored region in this very direction. The florists of our land *ought* to be *good* men. And, by the way, there are quite a few *women* who grow plants and send out beautiful catalogs. As a rule their prices are surprisingly low.

Now, if there is anybody whose eyes alight on these pages who would like the business of furnishing rooted cuttings by mail to the readers of GLEANINGS, I will give their names free of charge in our next issue. Why, the thought fairly makes me young again. Every person, no matter where situated, nor *how* he is situated, may develop these wondrous beauties right from the hand of the great Father above. He can do this in his own home right in his own dooryard; and when he (or she) becomes expert, such person may make it a profitable business in almost any neighborhood on the face of the earth. The knowledge and skill acquired in working with plants helps one not only to be a better farmer or market-gardener, but it has more or less to do with caring for these bodies of ours, and teaching us how to live in harmony with all animated nature. May God go with you and bless you as you learn of him through studying and working with the plants he has given us.

We will close with a letter from our good friend Dr. Miller, about roses. I asked him if he could tell me the name of a little rose I saw years ago. It had little blossoms not much larger than a dime, and it bloomed in little pots about the size of a teacup. May be some of the rest of you know of such a rose that was in fashion thirty or forty years ago.

Dear Friend Root:—You can hardly understand how delighted I am that you have got your eyes open to see the beauties there are in God's wonderful gift, the flowers. It reminds me of the words of the psalmist, "Open thou my eyes, that I may behold wondrous things out of thy law," Ps. 119:18. The wondrous things are there all the time, only we need our eyes opened to see them.

You say, "Why didn't you tell me, years before, the wonderfully nice things there are about roses?" Bless your heart, I've always tried, but your eyes weren't open. Now that they are opened, I've a longing for a good long talk with you. How I should enjoy it!

The miniature rose you saw years ago must have been, I feel pretty sure, double instead of single. It was probably a Bengal or China rose, the smaller kinds of which were quite popular 50 years ago under the name of button roses, or fairy roses. Polyantha roses have come in since, and have supplanted them altogether. Your favorite Clothilde (not Chlotilde), Soupert, is a polyantha, although very different from the others, Clothilde being the largest in the class. I have never seen any thing smaller than some of the polyanthas. They are a little mixed, I think, as to name, and I have some doubt whether all name them alike; but if you order the smallest flowering polyantha you will be likely to get what you want. If you must use a name, I would try paquerette or mignonnette. All are white or pale tinted.

I wish you could see a rose that stands almost in reach of where I sit writing. It is a Princess Bonnie, has been in bloom a week, and has given enough pleasure to the household to pay for its care for a whole year, although it will be expected to give many another bloom. The rose is more than three inches across; indeed, from tip to tip of the outer petals is more than four inches; each petal of a charming red is delicately veined, and throughout its whole week of life it has been breathing out a delicious perfume. It is an exceptional thing that a rose is allowed to fade upon its bush, as this one is doing, for when it gets to its best it always goes to the church or to the side of some sick-bed. It is thus doubly enjoyed.

Princess Bonnie is a comparatively new rose, and I haven't known it years enough to tell whether I should prefer it or Souvenir de Wooton (they are a great deal alike), if I could have only one red rose for the window. Meteor is good; a darker red, but lacks fragrance. Although red predominates among outdoor roses, especially the hardy ones, winter reds are decidedly scarce. The three above mentioned are good indoors and out, half hardy; and half-hardy roses would probably winter outdoors with protection at Medina. They are prolific bloomers—a desirable trait.

That reminds me that the terms "ever-blooming" and "perpetual," as applied to roses, are decidedly misleading to a novice. He reads about them in the catalogs, and expects a plant that will never be without a blossom, only to find that a great deal of the time no color but green is to be seen on the bush. Yet it is a pleasure for me, this minute, to glance up at the window and see the green buds, promise of red, white, or yellow in the future. Another glance makes me retract — there is something more than green on many a plant, although no blossom. The rich reddish-brown color of some of the young leaves is charming to one who has the love of roses in his heart. A sentence in your last letter I've read over several times: "Is there any thing prettier than a new shoot that starts up unexpectedly beside the old one? The dainty grace and color, as it unfolds, are just *entrancing*." I don't know. Which is prettier—a sweet girl baby, or the same baby when she gets to be sixteen? The shoot you speak of is the little baby, and the maiden is the unfolded shoot you speak of after it has unfolded its leaves to full size, and they are hesitating whether to be brown or green, with a delightful blending of both colors.

I see you have Kaiserin Augusta Victoria. If I could have only one white rose in the window, I think it would be that same Kaiserin; of purest white, graceful as a half-opened bud or full-blown flower; faithfully blooming summer and winter, it is hard to excel. Marie Lambert doesn't compare with it in quality; but if quantity of blossoms is what you want, no white rose will outdo Marie Lambert. Bride is a good white. Clothilde Soupert, the largest of the polyanthas, comes near being a white, sometimes well shaded with pink; is a prolific bloomer, with fine fragrance.

When you buy cut flowers of the florist nowadays, the yellow roses that you generally buy for Marechal Niel are really Perle des Jardins, the latter being much the better rose for the window. A sport from Perle called Sunset is a beautiful thing, with varied tints not unbefitting its name. After all, I believe I'd rather have Etoile de Lyon, a deeper yellow than Perle, and a freer bloomer.

Let me tell you the two chief objects I have to live for now. One is to have a normal class in every Sunday-school to recite in the regular Sunday-school hour (of course I'm interested in every branch of Sunday-school work, but that's the special point I work hardest upon); and the other is to have the young Presbyterians throughout the State of Illinois be interested in supporting a special missionary of their own, and to learn to "give tithes of all that they possess." In this last I have a special opportunity, as I am permanent chairman of the synodical committee on Young People's Societies, so I am practically at the head of the Christian Endeavor work among the Presbyterians in Illinois. I suppose you know that Presbyterians have the largest numbers in C. E. work. Our little C. E. society in Marengo give $400 a year to support Mrs. Swallen, a missionary in Korea. Now, if I can do only just a little in the two directions I have mentioned, and if, as a kind of side show, I can do just a little speck to help open the eyes of some to see in flowers the beauties that you and I see, why, I shall be content to—live just as long as I can.

I enjoyed those pictures in last GLEANINGS.

May the Lord make your life constantly brighter and more useful as he constantly opens your eyes to new beauties. C. C. MILLER.

Marengo, Ill., Feb. 23.

SCIENCE AND SUPERSTITION CONTRASTED; MORE ABOUT WATER-WITCHING.

Our good friend Gregory, the veteran seedsman of Marblehead, Mass., recently remonstrated because the silly superstition of water-witching was every little while brought forward with the claim that it has a place in true science; and a writer, later on, was allowed space in one of our leading agricultural papers to talk in a very patronizing way about friend Gregory because he would not admit water-witching was scientific. Now, a good many very good people (and perhaps well-educated people along certain lines) are making a big mistake in this very matter.

I wonder if I can not make the matter a little plainer than I have heretofore. The unreasoning advocates of this superstition tell us that even our intelligent scientific men, our genuine professors in colleges, do not know *every* thing—that is, they get behind the times occasionally. Of course, we will admit that they do not know every thing; but there are certain lines in which they are not likely to be behind the times. Our experiment stations, the authors of our text-books, and the heads of our scientific colleges, are compassing the face of the earth (going clear to the North Pole, for instance) for real scientific facts, and nowadays there is scarcely a thing that eludes their grasp. Let us, if you please, contrast the X rays discovery with water-witching. The latter has been before the world for ages. No scientific man accepts it; or if he does, he ought to be *ashamed* of himself. It will not bear the sharp searchlight of modern investigation for an instant. But how is it with X rays? It came into the scientific world like a meteor out of a clear sky. The news of its discovery was heralded everywhere, and it *succeeded* everywhere with everybody.* The invention came along the beaten track of true science. Why, I do not remember ever hearing anybody say he "did not believe it." There is no chance to express disbelief, because scientific men everywhere held the thing right up before the eyes of the people, and demonstrated that one could see a pair of shears right through the family Bible (or dictionary), and that you could see the nails and spikes in a stick of timber—yes, even through a foot or two of the soundest timber in the world. The X ray apparatus was a complicated arrangement, and well might one wonder that human ingenuity ever struck on the chemical and mechanical complications necessary to bring it out. The more recent wireless telegraphy came in the same way, along the beaten track of true science, and as a reward for honest hard work on the part of those who had made themselves masters of the accumulated knowledge of the world along the line of electrical and other science. The water-witching, with a silly forked stick in the hands of a still sillier person, will not bear investigation of any kind. It is not along the track of any science; in fact, if there is any truth in it we must admit that it reveals a new force in nature (just the same as the Electropoise and all of its imitations and combinations). Why do not the water-witches go before some scientific men and then have the matter recorded in our scientific books? How would it look, for instance, in our school text-books? But X rays and wireless telegraphy will be taught in schools, even if it requires a new edition of text-books to bring it out.

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*Water-witching works with only a certain favored few. X rays, wireless telegraphy, and all true science, work alike with everybody everywhere. When you get into spiritism you are told the spirits will work with some people (mediums) and not with others. This will do for witchcraft, astrology, water-witching, etc.; but with all true science never.

One man did consent to go before an experiment station, and prove his ability to find where to dig to get water. He was a gray-haired veteran, and was an honest man. This we know, because, when one of our bright young students asked him to go over the ground *blindfolded*, that he had just been over, and see whether his forked stick would do the same thing when he could not *see*, he at once consented. I do not know the exact outcome, only that the stick would not work, or else it worked at points so contrary to the stakes he had set first when his eyes were open, that he owned up at once he had been all his life under the influence of a delusion. Yes, he had actually grown gray in blindly leading the blind, in supposing he knew better than anybody else where to dig to find water.

Now, there is no use in telling these old stories of the wonderful things that have been done. They prove just as much, and no more, as do the stories that are now floating everywhere about being cured by Electropoise or modern telepathy or "absent treatment," whichever you are pleased to call it. Some years ago, when they were going to "drown me out" by the stories about manufactured comb honey, I offered $1000, as you may know, to the person who would find a single pound of such honey for sale on the market. No such thing could be found (and has never been found), and now the story is pretty much killed out. I wonder if it would help silence these persons who speak so patronizingly of the scientific world, if I were to offer $1000 for a man who would go before an experiment station and go through with his incantations with a crotched stick, and make them tally, when led about blindfolded, with stakes he had previously set with his eyes open. If there is not any such man, can not our agricultural papers and everybody else relegate this whole thing to the domain of witchcraft and astrology, exactly where it belongs?

THE LATEST IN REGARD TO DR. DOWIE.

The *Ram's Horn* for March 3d has devoted that whole issue to exposing Dr. Dowie; and I am very glad indeed they have done so. While we may not be able to comprehend how it is that a man can quote Scripture, preach as many good sermons as he has done, and also by his prayers give actual relief to so much suffering, yet it stands out strongly and clear that this man, notwithstanding the amount of good he has done in the ways mentioned, is a humbug and fraud. It is not any use for him or his followers to make any "explanations." I am personally acquainted with some of those who have felt it a Christian duty to show him up before the world, and I have known for years of the life and character of others who have been intimately associated with him for one or more years. In regard to the healing, Satan *may* have power to heal—at least to a certain extent. Hypnotism and mesmerism, or something along that line, may account for other cases; and finally I firmly believe that many people are healed by putting their trust in God, and going to him in prayer, and no doubt Dowie was instrumental, more or less, in showing them the *way* to do this. Successful healers are now starting up all over the world at such a rate that it seems as if humanity *must* learn a great lesson. Electropoise, oxydonor, and other humbug apparatus, have been doing the same thing that is now done without any apparatus or any thought or care, on the part of the healer; and the men who heal, and do it *successfully*, mind you, run all the way from low-down criminals and sots to those who may be partly honest in thinking God has given them miraculous power to heal the sick. No wonder so many people are going into the "healing" business; for the proprietors are rolling in wealth while their victims save up their earnings from poverty and severe everyday toil.

When Dr. Dowie went over his rigmarole about doctors, drugs, and devils, I protested. He said one Chicago daily was persecuting him without cause, and I thought it might be true; but when he hurled his curses at the whole Chicago press, Christian papers and all, I knew something was wrong. A little later, when he began denouncing Christian churches and Christian ministers, and demanding that his followers should cut themselves loose from all such organizations, I felt pretty sure of what the final outcome would be. If you want proof that can not be set aside, send 5c for *Ram's Horn* for March 3 It is published at 110 LaSalle Ave., Chicago, Ill.

TEACHING HYPNOTISM, MESMERISM, ETC.

Some little time ago I mentioned a professor who advertises to teach anybody how to hypnotize, etc. Here is a letter from one of our bee-keepers in regard to the man and his business. I have omitted name and address:

> *Dear Uncle Amos:*—Some time ago I saw you published the hypnotism fellow here as a humbug. You did right. It is the worst humbug out. I just saw in our daily paper that their postage per day was—just think—$50 to $75. It takes two men twice a day to carry the mail from their office to the postoffice, in a box with handles on like a honey-crate. The postoffice officials can't stop it, as he says he advertises to sell them the book for $5.00, and they gladly send him the $5.00. I don't think one in a thousand who purchases a book ever learns how to mesmerize any one. This firm is piling up the money, and it mostly comes from the working class.

Our friend is right. The people who send this man $5.00 for his worthless book are of a class that do not know any better than to believe that he can really teach hypnotism, so that any one who gets the book can hypnotize people, and thus manage to get ahead of their fellows. One might be tempted to say it serves them right. Well, I think our laws ought to protect our youth and people who are ignorant and unwary; and, once more, I *do* think the editor of any respectable paper should refuse space to such an advertiser; and the average editor of any paper knows very well that such advertisements are downright swindles and nothing less. Perhaps this is not a case of robbing *sick* people, exactly; but it *is* robbing the credulous, and people who do not know any better.

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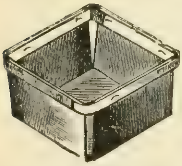

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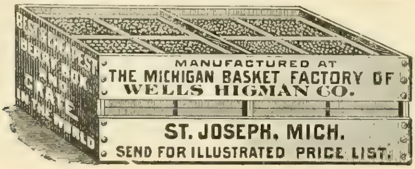

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COLE'S SEED STORE, PELLA, IA.

SEED POTATOES! **EARLY OHIO**—Fine, smooth, strong seed of good size, in any quantity. Write for prices. Also Pure-bred Sherwoods. Cocks and cockerels for sale. Eggs for hatching in season. Ask for what you want.

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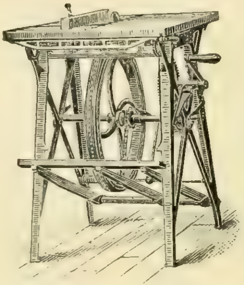
Shipped direct to anyone and guaranteed as represented or money refunded. Save agents large profits and get a wheel at rock bottom wholesale price. Our **Arlington Model K** is the greatest bargain ever offered; in lots of one or more at **$14.85**

$35	"Arlington"	$16.50
$40	"	$18.50
$50	"Oakwood"	$21.50

Good wheels $12.50, $11.00 & $10.00 Stripped Wheels $7.00

the Arlington & Oakwood are strictly high grade and the best that can be made. Thoroughly tested and fully guaranteed. Over 100,000 riders can testify to their superior quality, style, construction and workmanship. Illustrated catalog free. **CASH BUYERS' UNION, 162 W. Van Buren St., B-345, Chicago, Ills.**



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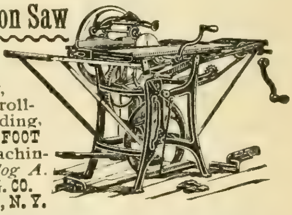

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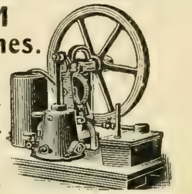

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Select stock of the best of the old and new varieties. Descriptive circular and price list sent free. Refer by permission to The A. I. Root Company. Address

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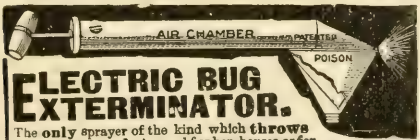

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The **only** sprayer of the kind which **throws spray, upward.** As good for hen-houses as for potatoes. **Price, only 50 cents;** 25c more delivered at your express office. Send for catalogue. **Agents wanted.**
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SPECIAL NOTICES BY BUSINESS MANAGER

ONE-GALLON SQUARE SYRUP-CANS.

We have a large stock of one-gallon square cans with 1¼-inch screw, made especially for maple-syrup trade, which we are selling for prompt shipment, f. o. b. Medina, at $11.00 per 100; with 1¾-inch screw at $11.50. This is a special price for only a short time. Send on your orders if you can use any at this price.

THE 2-LB. MUTH JARS.

We have something special to offer on two-pound Muth jars for shipment direct from Cincinnati, O. We shall be pleased to hear from any who use this size, stating the quantity they could take. We have bought up a quantity at a special price, and are willing to divide the benefit with those who use this size.

THE MONITOR BINDER.

There are those who like to keep their file of GLEANINGS bound together, and yet who do not care for an expensive binder. Here is one that is very convenient and inexpensive. It will hold 24 numbers easily, bound securely and neatly, and the expense is only 15 cents each postpaid; 2 for 25 cents. We have them in stock to send by first mail.

MAPLE SYRUP AND SUGAR.

As usual at this season we are handling maple products, and are prepared to supply those in want of a choice article at the usual prices: Syrup at $1 00 per gallon; 10 gallons, $9.00; 25 gallons or over, at 85 cts. No. 1 sugar at 10 cts. per lb.; No. 2 sugar at 9 cts. We have secured very little sugar as yet, but can furnish syrup from stock, and no doubt shall have plenty of sugar very soon.

WIRE POULTRY-NETTING.

We are obliged to mark up our prices on wire poultry-netting. We have been selling from stock purchased at last year's prices; but this is getting low, and we would have to pay more for it now than the price at which we have been selling. Our price for 2-inch Climax poultry-netting, until further notice, will be as follows for the various widths shipped from here or Chicago for New York. Per roll, 150 feet long:

12 inches wide,	$1.00;	36 inches wide,	$3.00;
18 " "	1.50;	42 " "	3.50;
24 " "	2.00;	48 " "	4.00;
30 " "	2.50;	60 " "	5 00;
		72 " "	6.00.

Less 5 per cent in 5-roll lots; 10 per cent in 10-roll lots. We still have quite a little stock on hand here. Orders which we can fill from this stock we offer at an extra 10 per cent off above prices. We can not allow this extra discount on shipments from New York or Chicago.

Of 3-inch mesh No. 18 wire, we have a few rolls which we will close out at the following special prices:

18 rolls,	18 inch wide, at	$1.20	per roll.
6 "	24 " "	1.60	" "
3 "	30 " "	2.00	" "
1 "	36 " "	2.40	" "
3 "	48 " "	3.20	" "

New stock of this size will cost the same as the 2-in. mesh Climax netting. The above is especially desirable for wire-trellis, for peas, beans, or other climbing vines, and the price we offer to close out is 20 per cent below present value.

Climax sheep and hog fencing, 20 rods to a roll, is worth, 23 inches wide, $6 00 per roll; 50 inches wide, $11.25 per roll; 3-roll lots, 5 per cent off shipped direct from Chicago.

Special Notices by A. I. Root.

A BOOK ON GINSENG CULTURE.

Several seedsmen are now offering ginseng seed and the plants for sale. One seedsman advertises it and a 25-cent book. Said book, however, is a miserable excuse for a book. There are less than half a dozen pages, poorly printed, badly written, no cuts, price marked on the outside $1.00. It was printed in 1897. I have several times spoken about this matter of charging a big price for a very small amount of information because it was on a subject not generally understood. Well, the O. Judd Co., of New York, have just gotten out a very pretty little book on ginseng cultivation, harvesting, marketing, etc; 64 pages, 12mo, finely illustrated, good paper; and while this is a real bona-fide book (clear *up to date*) the price is only 25 cents. It can be mailed from this office.

Have ginseng roots any real medicinal value? When I was a boy 18 years old the roots were about 50 c. per lb. (now $5.00); and a good many people made considerable money by digging them at this price, for at that time they were comparatively common in the forests. Well, even at that early age I used to have troubles with my digestion. At one time when I was away from home among strangers, and out of money, and sick besides, I tried to follow some hunters out in the woods. I could not keep up with the crowd, however, and sat down and studied nature One of the hunters showed me some ginseng-plants, told me about their value, and said they were good to eat if I liked them. They seemed to hit the spot, and I dug and ate all I could find. I got over my summer complaint, and went on my way rejoicing, and for a number of years I used to hunt ginseng roots when I had a repetition of my trouble. When I could not get off in the woods to dig the fresh roots, I used to get them at the drug-store. By the way, I have two ginseng roots now over in that little greenhouse, and I am going to try hard to see if that forcing-bed will not help me to "get a move" on them. It seems to me it ought not to take *three or four years* to grow decent-sized roots.

Ginseng-plants are advertised in the back part of the book at $3.00 per 100. I mention this so you will not be induced to pay 25 cts. each for more than a few just to try your hand at growing them.

HEIGH-HO!

I have already (Mar. 15) some ginseng-plants up and growing in the greenhouse. I procured the sprouted roots from friend Mills, who advertises ginseng-plants in this issue. They came in very nice trim, and commenced to grow almost immediately. I have one of them in that forcing-bed; and if it keeps on at the rate it is growing now, I think I shall get seed in one year, and may be some good-sized roots also. By the way, is not jadoo just the thing for growing ginseng? I will report later.

WHAT TO DO, AND HOW TO BE HAPPY WHILE DOING IT.

Many of our friends will remember that this book was published about twelve years ago It was written with a view of answering the question that so many, both at home and abroad, had been asking me almost all my life—"What can I do to support my family?" In the book I discussed different kinds of employment that can be carried on at home, getting the wife and children to assist. Of course, the larger part of the book is devoted to market-gardening, or, if you choose, to "high-pressure" gardening. Since the book was put out we have also published our tomato-book and strawberry-book Both have had a large sale. Well, during these twelve years a good many times I have felt bad to think it did not contain important discoveries and short cuts that have come up since its publication; and just now I have completed an appendix to this book. It is a pamphlet of 16 pages, fully illustrated. Nearly all of it has appeared at some time or other in the pages of GLEANINGS during the past 12 years. Any person who has purchased the book "What to Do" may have this appendix free of charge on application. To others the price will be 10 cents, postpaid. All future editions of the book "What to Do" will include this appendix, but the price will remain as heretofore—40 cents; by mail, 48; the same in cloth covers, 50 cents; postpaid, 60. You can see by the postage that it is a pretty good-sized book.

The boys have suggested that this book would have had a better sale had I given it a different title—something like "Gardening for Profit;" "Gardening Under Glass," or even "High - pressure Gardening." This may be true; but as the book touches on a large range of home industries besides gardening. I do not know how we can very well give it a different title. In order to place the book still more in the hands of the people where it will do good, we make the following offer: For every dollar sent us for GLEANINGS, where no other premium is called for, you may have this good-sized valuable book, provided you send us 10 cents to pay postage and packing. If you can get somebody else to subscribe also, and send us $2 00, we will send two books, and pay the postage ourselves, giving the one who gets another to send with him, a *cloth-bound* book.

"A FEW OF THE BEST SEEDS SELECTED FROM THOUSANDS."

The above is the title of a condensed seed catalog from our good friend Burpee, of Philadelphia. Our friends will remember that, years ago, with the assistance of an experiment station, I selected out of thousands a few seeds of vegetables which I thought I could recommend. During the years that have passed I have tried hard to keep the list from getting larger, but not always with success, say with tomatoes, for example. The greater part of our seed catalogs keep adding to their list each year; and when there are fifty or sixty different kinds of peas,* and other things in proportion, it is not only an enormous burden on the seedsman to keep all of these in stock, but it is a tremendous burden on the purchaser to decide what he had better have when he can not afford to bother with more than three or four of a kind. Well, I was very agreeably surprised to see how nearly Burpee's condensed catalog tallies with our own. He selected only two kinds of celery; namely, Giant Pascal and Golden Self-blanching. I think *I* would add White Plume to the two, but perhaps the Self-blanching would answer very well in its stead. He has only three varieties of cucumbers—two of them the same I have selected. His list of onions is very nearly the same as our own, but he has some we do not have, and so on through. Now, I am well aware that there are certain localities where they want a certain strain of seed which is very much better for them than any thing else, and for different localities somebody is almost sure to want almost any one in the list. We have proved this by undertaking to drop out those that were not called for very much; but almost invariably there has been a protest; and we have been compelled to put the thing back that we had once dropped. Burpee has done a good deal the same thing with flowers; but I notice his list of sweet peas still includes forty or fifty different kinds; but as that is his great specialty, perhaps it could not be helped. Of these selected varieties, he offers any 32 packets for $1.00. With the packets of peas, beans, and corn, he offers 16 ten-cent packets for $1.00.

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*May I call attention to one illustration that lies right before me? I thought I should like to have a few nasturtiums in that greenhouse. I had heard of a Tom Thumb nasturtium, and thought that would be about what I wanted, to grow under glass. So I wrote to Burpee, asking him to send me a packet of Tom Thumb nasturtiums, and added that, if there were more than one color, he might send a packet of each. How many packets do you suppose I got? Only 28 different kinds of Tom Thumb, and he added two more named Lilliputian, making an even 30. There are two morals here: One is, that Burpee is an enterprising seedsman, and fully up to the times; and the other is, that in so simple a plant as the common nasturtium there are—nobody knows how many different varieties cataloged and put up in packets; but we do know there are 28 different sorts of TOM THUMB nasturtiums.

KIND WORDS FROM OUR CUSTOMERS.

I have been reading GLEANINGS for 20 years, and I can see an improvement in both matter and make-up of the journal every year. EMIL J. BAXTER.
Nauvoo, Ill., Dec. 25.

The queen I ordered from you last season proved pure, and her bees are great honey-gatherers. I am well pleased with her. PEDER L. JOHNSEND.
Bee, Minn., Jan. 2.

Friend Root:—I received your A B C of Bee Culture, and am much pleased with it. I don't know how I could get along without it. I think every bee-keeper ought to have one. A. B. C.
Texas, N. Y., Feb. 22.

OUR CHRISTMAS NUMBER.

Of course we do not take space to repeat all the kind words about it; but here is one friend who is moved to start out with a little couplet, and so we give it:

Pretty maidens, swarming bees;
Happy homes and blooming trees.

Order No. 81,427 I sent you, filled by you promptly, and shipped by freight as directed, was received the 18th inst., and found to be in first-class condition. Every thing is complete, and exactly as I have expected. I have never before had more satisfaction in receiving a bill of goods than I did in receiving this one.
American Fork, Utah, Jan. 20. B. BLOHM.

BEES!
12 colonies of Italian Bees in Simplicity hives for sale, $4.00. **JOHN F. NICE,**
329 Manyard St., **Williamsport, Pa.**

Albino Queens. If you want the most prolific queens; if you want the gentlest bees; if you want the best honey-gatherers you ever saw, try my Albinos. Untested queens, $1.00; tested, $1.50.
J. D. GIVENS, Lisbon, Texas.

BUFF PLYMOUTH ROCKS!
Best farmer's fowl; large size; mature early; yellow skin; no pin-feathers to show; great layers; PRIZE-WINNERS.
BLACK MINORCAS. . . . . . .
Large size; layers of large eggs; are PRIZE WINNERS. Prices reasonable for eggs and stock.
Robert Mairet, : : : : Akron, Ohio.

Wants and Exchange.

Notices will be inserted under this head at one-half our usual rates. You must SAY you want your ad in this department, or we will not be responsible for any error. You can have the notice as many lines as you please; but all over ten lines will cost you according to our regular rates. We can not be responsible for dissatisfaction arising from these "swaps."

WANTED—By active young man of 20, strictly temperate, work by the month; had some experience with bees. CHAS. L. MANLEY, Yale, Mich.

WANTED—To exchange, 125 Falcon surplus cases and 2 Daisy foundation-fasteners, for maple-sap evaporator or sap-buckets, or 32 repeating rifle.
HARRY BEAVER, West Groton, N. Y.

WANTED—To exchange, an Aspinwall two-horse potato-planter, as good as new, for bees, honey, or supplies; or would sell cheap.
ED. WILKINSON, Wilton, Wis.

WANTED—To exchange, 4×5 Kodak, Singer sewing-machine, and bicycles, for Barnes or Union saws, emery grinders, etc. ROBERT B. GEDYE, LaSalle, Ill.

WANTED—To exchange for honey or offers: One dovetailing machine, one drum sander, one sticker, one cutter-head for cutting entrances in sections, one planer, 24-inch, double cylinder; all in good condition. Address WM. H. BRIGHT, Mazeppa, Minn.

WANTED.—Situation as assistant bee-keeper by a young man having had a season's experience with an Ohio bee-keeper. Good reference.
J. C. MCCORMICK, 671 Mitchell Ave., Detroit, Mich.

WANTED.—To exchange full colonies of Italian bees in D. hives, and 1 extractor, for Hereford or Durham calves a few weeks old.
J. N. COLWICK, Norse, Texas.

WANTED.—To buy honey. Should like to hear from parties having extracted honey to offer, and their best price, delivered at Cincinnati. I pay cash on delivery.
C. H. W. WEBER,
Suc. to C. F. Muth & Son, Cincinnati, Ohio.

WANTED.—Your honey. We will buy it, no matter where you are. Address, giving description and price.
THOS. C. STANLEY & SON, Fairfield, Ill.

FOR SALE.—Light amber honey, good body and flavor, at 8 cts. per lb, in 60-lb. tin cans.
C. J. BALDRIDGE, Kendaia, Seneca Co., N. Y.

WANTED.—Comb and extracted honey. State price, kind, and quantity. R. A. BURNETT & CO.,
163 South Water St., Chicago, Ill.

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Strong, Healthy Chicks

are hatched by our incubators, and more of them than hens can hatch. Why? Because our regulator never fails to keep the **heat just right. Catalogue printed in 5 languages** gives full descriptions, illustrations and prices, and much information for poultry raisers. **Sent for 6 cents.**

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HATCH with the perfect, self-regulating, lowest priced first class hatcher—the **EXCELSIOR Incubator**

Hatches the largest per cent. of fertile eggs at the lowest cost.

Circulars free. Send 6c. for Illus. Catalog.

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310 First Premiums

Awarded to the **PRAIRIE STATE INCUBATOR**, Guaranteed to operate in any climate. Send for catalogue.

PRAIRIE STATE INCUBATOR CO. Homer City, Pa.

5 Cents Each for Names.

Mention this paper, send 15 cts. and the names of 2 neighbors who raise poultry, and we will send you our monthly 20-page paper for one year. Regular price 25 cts. a year. Sample copy free.

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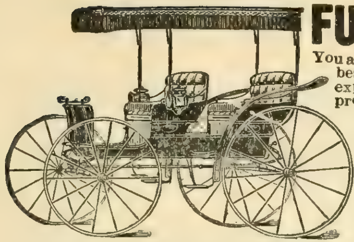
— Room 500 —
325 DEARBORN STREET, CHICAGO.



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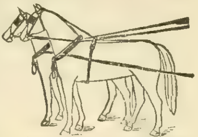

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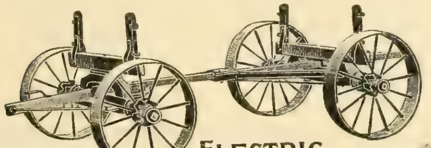

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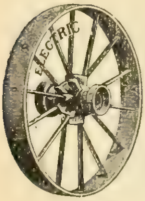

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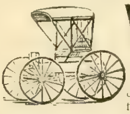

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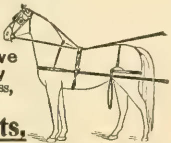

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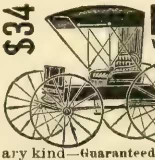

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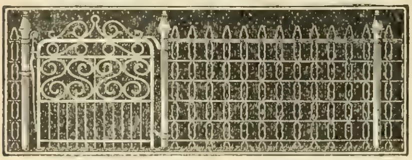

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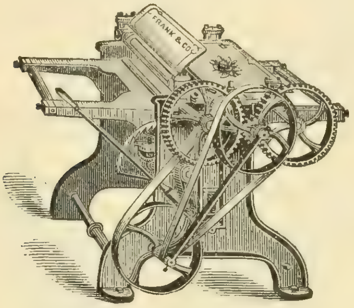

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The above cut shows one of our small Planers, of which we make twelve different styles and sizes. Also large Planers, Band Saws, Buzz Planers, Moulders, Wood Lathes, and all kinds of

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One frame, bees, brood, and queen, $1.75. Two frames, $2.50. Three frames, $3.00. Discount on larger lots. All queens from imported mothers. I will also sell full colonies. Write for prices.

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will save money and freights by buying supplies from

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20-page illustrated price list now ready.

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Dealer in **BEE-KEEPERS' SUPPLIES,**
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Root's Goods at Root's Prices. Catalog free.

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Groceries and Bee-Supplies at Wholesale Prices

by ordering in wholesale quantities of VICKERY BROS., Evansville, Ind.

They carry an immense stock of sugar, coffee, teas, canned goods, soap, candles, provisions, flour, oil, garden and field seeds, nails, fence-wire, wooden and willow ware, grocers' sundries, bee-hives, sections, foundation, comb, and general bee-keepers' supplies; buy and sell honey and beeswax.

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OPPOSITE POSTOFFICE.

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AT WHOLESALE AND RETAIL.

This foundation is made by an absolutely non-dipping process, thereby producing a perfectly clear and pliable foundation that retains the odor and color of beeswax, and is free from dirt. Working wax into foundation for cash, a specialty. Beeswax wanted. A full line of supplies at the very lowest prices, and in any quantity. Best quality and prompt shipment. Send for large illustrated catalog.

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MADE TO ORDER.

Bingham Brass Smokers

Made of sheet brass, which does not rust or burn out ; should last a lifetime. You need one, but they cost 25 cts. more than tin of the same size. The little open cut shows our brass hinge put on the three larger sizes. No wonder Bingham's 4-inch smoke-engine goes without puffing, and does not drop inky drops. The perforated steel fire-grate has 381 holes to air the fuel and support the fire.

Heavy tin smoke engine, 4-inch stove per mail, $1.50 ; 3½-inch, $1.10; 3-inch, $1.00; 2½-inch, 90c; 2-inch, 65c. Bingham smokers are the originals, and have all the improvements, and have been the standard of excellence for 22 years.

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We manufacture a full line of the latest BEE-SUPPLIES.

Our motto is, "Perfect Goods and Prompt Shipment."

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PAGE & LYON MFG. CO., New London, Wisconsin.

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Our specialty is making SECTIONS, and they are the best in the market. Wisconsin basswood is the right kind for them. We have a full line of **BEE-SUPPLIES.** Write for free illustrated catalog and price list.

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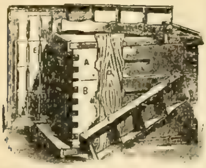
64-page Catalog of Every Thing Bee-keepers Need.

Illustrated and fully described. Especially valuable to beginners for the information it contains Send your address on a postal and get it NOW. Established 1884.

J. M. Jenkins, Wetumpka, Alabama.



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REVISED EDITION.

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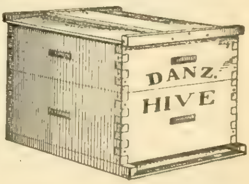

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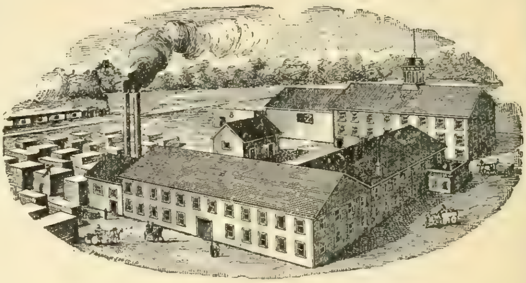
BEES ON SHARES.—I have nearly 180 hives of bees and wish to let them on shares to a good reliable person, one who is not afraid to work. Any one who sees this can write to

MRS. D. D. WINKELMAN, Dudleyville, Ariz.



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We have the best-equipped factory in the West. Capacity, one carload a day; and carry the largest stock and greatest variety of every thing needed in the apiary, assuring BEST goods at the LOWEST prices, and prompt shipment. We want every bee-keeper to have our FREE ILLUSTRATED CATALOG, and read description of Alternating Hives, Ferguson Supers, etc. *Write at once for a catalog.*

We also manufacture TANKS of either wood or galvanized steel, all sizes, any form, and for all purposes. Price list free.

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BEES! BEES!

Full colonies of Italian bees, in complete hives, from $7 to $8.50 per colony, depending on style of hive; few in 10-frame Draper Barns.

Bee-hives! We furnish with our hives an Improved Higginsville Cover, the ridgeboard going the full length of the cover. Reversible Bottom-boards are also furnished whenever desired.

VEILS.—Silk brussels face; none better, 35c postpaid. If you are not satisfied, return it and get your money. Catalog free.

I. J. Stringham, {Apiaries at Glen Cove, L. I.} **105 Park Place, N. Y.**

$1900, A.D. 1900,

will not buy my 500 colonies of bees, but am ready to furnish good Italian queens

BY RETURN MAIL.

1 Untested Queen, $1.00; 6 for $5; 12 for $9.
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1 Best Breeder, $4.00.
Nuclei, $1 to $10 in season.

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Plus carload rate freight.

Bees, Honey, and Beeswax bought and sold.

Watch My BARGAIN COUNTER in April.

Coin, double or single standard, Uncle Sam's Postoffice money-orders, bank draft, or registered letter, will get you prompt service.

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Until you see my 40th annual catalog. A full line of hives and fixtures best adapted to our New England climate. Also best brands of **Comb Foundation and Section-boxes.** I have also made arrangements to keep quite a general stock of

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Parties desiring these goods can get them of me, and **Save Freight Charges.** Bees, Queens, and Nucleus Colonies from the **very best strains** in America. A 40-page illustrated catalog free. Address

W. W. Cary,
Lyonsville, Mass.

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Honey Column.

CITY MARKETS.

DETROIT.—Fancy white comb, 14@15; No. 1, 13@14; amber, 10@11; dark and unsightly lots, almost unsalable. Extracted white, 7@7½; amber and dark, 5@6. Beeswax, 26@27. M. H. HUNT & SON.
Mar. 23.

NEW YORK.—Comb-honey market is now almost bare, with a few small straggling lots coming now and then, which are soon picked up. The demand is also growing less as the spring approaches. Of extracted honey, there is some in hands of dealers. The demand for same has not been up to expectations, and very unsatisfactory so far, easing up prices. We are quoting to-day, fancy white comb, 14@15; A No. 1, 13@14; No 1, 12@12½; No. 2, 11@12. Extracted white, 8; light amber, 7½; amber and dark, 6@6½; fancy buckwheat, 10@11; No. 1, 9@10; No. 2, 8½@9. Beeswax, 27½@28½. CHAS. ISRAEL & BRO.
Mar. 20.

PHILADELPHIA.—Very little comb honey in the market—not enough to establish a price. Extracted a little easier. We quote fancy white, 7½@8; amber, 6@7. Beeswax, 28. We are producers of honey—do not handle on commission. WM. A. SELSER,
Mar. 20. 10 Vine St., Philadelphia, Pa.

ALBANY.—Honey market continues quiet, nothing new to report. Beeswax, 26@28.
McDOUGAL & Co.,
Successors to Chas. McCulloch & Co.,
Mar. 20. Albany, N. Y.

BUFFALO.—The market is steady for honey. The demand is not quite so active as it was. Fancy, 15@16; A No. 1, 14@15. No. 1, 13@14; No. 2, 11@12; No 3, 10@11; dark, 9@11. Extracted, 6½@8. Beeswax, 28@30. I sell on commission—do not buy.
W. C. TOWNSEND,
Mar. 22. Buffalo, N.Y.

NEW YORK.—Comb honey well cleaned up, and firm; could handle several hundred crates to advantage yet. Extracted rather quiet, and market well supplied of all kinds excepting clover and basswood. Beeswax firm at 27@28.
HILDRETH & SEGELKEN,
Mar. 17. 120, 122 West Broadway, New York.

CHICAGO.—We quote best white comb at 15. An occasional small lot of fancy sells at 16; off grades of white, 12@14; amber, 10@12. Extracted, 8@9 for fancy white; 7@8 for amber; 6@7 for dark grades. Beeswax, 27. Receipts are larger, and the demand is not as good as it has been. R. A. BURNETT & Co.,
March 19. 163 S. Water St., Chicago, Ill.

MILWAUKEE.—This market continues very steady as regards honey, both on values and demand, and the quick steady consumptive demand keeps the stock very well reduced. We advise any shippers who may have either comb or extracted, to send forward their shipments. We continue to quote fancy 1-lb. sections, 15@16; No. 1, 1-lb. sections, 13@14½; amber, 1-lb. sections, 13@14. Extracted in barrels, kegs, and pails, white, 8½@9. Beeswax, 25@26.
Mar. 14. A. V. BISHOP & Co.

KANSAS CITY.—We quote fancy white comb, 15; No. 1, 14; No. 1 amber, 13; No. 2, 12½. Extracted, white, 8; amber, 7; dark, 6. Beeswax, 22@25.
C. C. CLEMONS & Co.,
Mar. 19. Kansas City, Mo.

WANTED.—To buy honey. Should like to hear from parties having extracted honey to offer, and their best price, delivered at Cincinnati. I pay cash on delivery.
C. H. W. WEBER,
Suc. to C. F. Muth & Son, Cincinnati, Ohio.

WANTED.—Your honey. We will buy it, no matter where you are. Address, giving description and price.
THOS. C. STANLEY & SON, Fairfield, Ill.

FOR SALE.—Light amber honey, good body and flavor, at 8 cts. per lb, in 60-lb. tin cans.
C. J. BALDRIDGE, Kendaia, Seneca Co., N. Y.

WANTED.—Comb and extracted honey. State price, kind, and quantity. R. A. BURNETT & Co.,
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Sharpless Cream Separators—Profitable Dairying.

The Western interest in the Belgian hare is spreading all over the whole country. See advt.

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We still have a good supply of choice alfalfa extracted honey in 60-lb. cans which we offer at 9 cts. per lb. in case lots; five cases or over, 8½ cts.

MAPLE SYRUP AND SUGAR.

Owing to unfavorable weather so far, the maple crop is likely to be rather light in this vicinity. We are, however, securing sufficient for all orders received so far. If in need of any of these sweets let us hear from you.

CLIMAX POULTRY-NETTING.

If in need of wire poultry-netting, now is the time to secure it at a low price while our present stock lasts. We published new prices in last issue, and offered 10 per cent off these prices on orders which we can fill from stock on hand here, bought before the advance. This stock will not last long, and we advise you to avail yourself of this opportunity if in need of the goods.

FAULTLESS SPRAYER.

We are prepared with a large stock of these sprayers which created such a sensation last year. Although the cost to us has been raised we are selling them at practically the same old price, and the tin one this year has a galvanized iron can which is heavier and more durable. Price 60c for tin sprayer, or 85c for all brass. By mail, 25c each extra. Write for prices in quantities if interested.

BUSINESS AT THIS DATE.

As we go to press we have orders for six carloads not yet filled, but which are nearly ready, and will go forward within a week or ten days. The volume of orders is rather light for this season of the year; but the spring is late, and we still have about fifteen thousand catalogs to mail to complete our list. Prospects generally seem promising for a honey crop if favorable conditions continue. Our agencies generally are well supplied with goods, and we have a large stock on hand here, so that there should be very little delay this season in handling your orders. We have expected a light demand for goods, owing to the heavy losses a year ago, followed by the light honey crop. We are, however, ready to take care promptly of such business as you can send us.

JADOO FIBER, AND HOW TO GET IT.

In the first place, it will not pay to send any thing by mail or express that is worth only 2 cts. per lb. If you want it with other goods or to go by freight we can furnish it by the bag of 125 lbs. at 2 cts. per lb. The manufacturers object to our selling it in smaller quantities unless we charge their regular list prices. Now, when you are ordering something by freight the jadoo can be put in for packing, so the freight will not cost you any thing; and we will furnish 20 lbs., free of charge, to everybody who sends us $1.00 for GLEANINGS, and asks for no other premium. Or you may have 10 lbs. with every dollars' worth of seeds you purchase from our seed catalog, with the exception of the clovers. These are sold so close that we can make no discount or premium on money sent for clover seed.

TRUE WATER-CRESS; ROOTED CUTTINGS.

By mail, postpaid, 25 for 10 cts.; 100, 25 cts. We offer them thus low because we want to clear off a bed.

Wants and Exchange.

Notices will be inserted under this head at one-half our usual rates. You must SAY you want your ad in this department, or we will not be responsible for any error. You can have the notice as many lines as you please; but all over ten lines will cost you according to our regular rates. We can not be responsible for dissatisfaction arising from these "swaps."

WANTED—To exchange for honey or offers: One dovetailing machine, one drum sander, one sticker, one cutter-head for cutting entrances in sections, one planer, 24-inch, double cylinder; all in good condition. Address WM. H. BRIGHT, Mazeppa, Minn.

WANTED.—To exchange full colonies of Italian bees in D. hives, and 1 extractor, for Hereford or Durham calves a few weeks old.
J. N. COLWICK, Norse, Texas.

WANTED.—To exchange one automatic guage lathe and one broom-handle lathe toward a shingle saw, planer, or circular-saw mill or sticking machine.
W. S. AMMON, 216, 218 Court St., Reading, Pa.

WANTED.—To exchange second-hand bicycle, in good condition, for bee-supplies or offers.
W. C. GATHRIGHT, Dona Ana, N. M.

WANTED.—To buy 500 bu. No. 1 dry rice popcorn.
GEO. G. WILLARD, 270 Pearl St., Cleveland, O.

WANTED.—To buy old coins, used revenue and postage stamps. Give full description and price.
M. RODERMOND, West Haverstraw, N. Y.

WANTED.—Stahl's No. 4 spraying-outfit, in exchange for good bucket pump, or offers.
H. FITZ HART, Dalkeith, Fla.

WANTED.—Young man to take full charge of 125 swarms of bees to run for comb honey on shares.
E. A. HORRIS, No. Petersburg, N. Y.

WANTED.—To exchange one Holstein bull calf, nuclei and full colonies of Italian bees, for Hereford or Durham calves 3 or 4 weeks old, two-horse wagon, or a two-seat surrey.
J. N. COLWICK, Norse, Texas.

WANTED.—To exchange good second-hand hives using standard Langstroth frames, for two or three frame nuclei with tested queens, or for cash. Write for full description of the hives.
CHAS. C. CHAMBERLIN, Romeo, Mich.

See the Good Things!

The BEE-KEEPERS' REVIEW for April will soon be out, and here are some of the good things that it will contain: The frontispiece will show the wintering cellar and apiary (of 300 colonies) belonging to John F. Otto, of Wisconsin. Mr. Otto has for fourteen years devoted himself exclusively to the production of comb honey; and, after much persuasion, he has been induced to describe, for the first time, his methods of management. His plans for *invariably* securing very populous colonies during the honey harvest are novel, practical, and *positive.* His article will appear in the April REVIEW.

The $5.00 prize for the best article was awarded to H. D. Burrell, of South Haven, Mich. It was upon the "Production, Care, and Sale of Extracted Honey;" and it is unquestionably the best article on the subject that I have ever seen. It will appear in the April REVIEW.

C. A. Hatch, of Richland Center, Wis., is one of the brightest men in our ranks. I visited him last summer, staying over night with him, and I met him again at the Madison convention last winter, and I have no hesitation in saying that he is unusually bright, keen, and clear-headed. I shall give his picture in the April REVIEW, and he will give what seems to me the most weighty reasons why we should adopt the tall section, illustrating his ideas by diagrams. It is the best article on the subject that I have seen.

A new writer from the South, Mr. G. W. McGuire, will give a most excellent article on "Spring Management and Comb-honey Production."

Taken all in all, the April REVIEW will contain unusually valuable information.

The REVIEW is $1.00 a year; but to each subscriber for 1900 I will send 12 back numbers free. For $2.00 I will send the 12 back numbers, the REVIEW for 1900, and a queen of the Superior Stock.

W. Z. HUTCHINSON, Flint, Mich.

What's worth doing at all is worth doing well.

Do you see scrub horses, cattle, hogs, etc., on the thrifty progressive farm? No, nor do you see scrub bees kept by the progressive apiarist. If you only knew how greatly you are handicapped trying to compete in the bee-keeping world with common stock you would inaugurate a change. Get some queens of my strain of Italians, and be convinced.

Orders booked now for delivery in season.
Price $1.00 for warranted queens untested.

◆

JEWELL TAYLOR, Forestville, Minn.
Money-order Office, Spring Valley.

Established 1885.

Lone Star Apiaries.

Price of queens from imported mothers.
(Golden same price.)

	1	6	12
Tested	$1.50	$8.00	$15.00
Untest'	.75	4.25	8.00

Select tested, either race, $2.50. Bees by the pound on one frame, $1; 10 or more pounds, 90 cts. I have special express rates on nuclei or pounds of bees.

G. F. DAVIDSON, Fairview, Wilson County, Texas.

REMOVED!

EARLY QUEENS.

W. H. Laws has removed his entire queen-rearing apiaries to Round Rock, Texas, where he will be better fitted than ever to fill orders for the LAWS strain of FAULTLESS 5-BANDED bees the coming season. BREEDING QUEENS always on hand. Price $2.50 each. I am also breeding the leather-colored stock from imported mothers. Tested queens, either strain, $1.00; 6 for $5.00; untested, 75c; 6 for $4.00. Queens ready in season.

W. H. LAWS, Round Rock, Texas.

CHOICE HONEY QUEENS.

Last year, as the conditions were most favorable, I reared a large lot of queens from one of Doolittle's VERY BEST mothers. Only the best cells and virgins were used. I requeened a lot of my double-story ten-frame colonies with part of them. They are now running over with bees, though the season has been unfavorable. Prices of these queens are, tested, $1.50; select tested, $2.00; also untested, $1.00; dozen, $9.00. Send card for my circular. H. Lathrop writes: "I have bought queens from different breeders, and never got any that were better than those I got of you." **J. B. CASE, Port Orange, Fla.**

We are Headquarters for the Albino Bee.

The Best in the World.

If you are looking for the bee that will gather the most honey, and the gentlest of all bees in handling, buy the Albino. I also furnish the Italian, but orders stand 50 to 1 in favor of the Albino. I manufacture and furnish supplies. Address

S. Valentine, Hagerstown, Md.

BEES AND QUEENS.

Either Golden Italian, 3-banded Italians, or Holy Lands, your choice. Nothing but the best of stock bred in 3 different yards, several miles apart. Send for circular and price list. It gives methods of queen-rearing, honey production, etc. Prices, either race: Untested, March, April, and May, $1.00 each; 6 for $5 00; per dozen, $9.00. Tested, $1.50; 6 for $8.00; per doz., $15.00. Untested, June, July, Aug., and Sept., 75c; 6 for $4.25; per doz., $8.00. Tested, $1.25; 6 for $6 75; per doz., $12.00. Special discount in large quantities. Breeding queens a specialty.

O. P. HYDE & SON, Hutto, Texas.

Queens bv Return Mail

The choicest of tested Italian queens, $1.00 each.

Large yellow queens, healthy and prolific; workers the best of honey-gatherers. Safe arrival and satisfaction guaranteed in every case. Send for price list.

J. W. K. SHAW & CO., Loreauville, La.

The A. I. Root Company,

10 Vine Street,
Philadelphia, Pa.

Direct Steamer for Florida, Georgia, North and South Carolina, Virginia, Maryland, Delaware, and all points East and South.

All orders sent to the Philadelphia office will have same attention and care as Medina. 1900 goods now in stock. Order before further advance. We have 15 bbls. and 50 60-lb. cans of pure basswood and clover honey which we will sell at 8 cts. from Philadelphia.

Dr. Miller's Honey-Queens.

One Untested Queen and the American Bee Journal one year, Both for $1.50.

We have been fortunate in making an arrangement with DR. C. C. MILLER—the well-known honey-specialist—to rear queens EXCLUSIVELY FOR US DURING THE SEASON OF 1900. These Queens will be mailed in rotation, beginning about June 1, so "first come first served." We are ready to book orders now.

The queens Dr. Miller will send out on our orders will be precisely the same as those he rears for his own use, so of course they will be from his best stock. His best colony in 1899 had a queen reared in 1898; May 5, 1899, it had brood in four frames, and he gave it at that time a frame of brood without bees. It had no other help, but May 25 a frame of brood with adhering bees was taken from it, and the same thing was repeated June 3, leaving it at that time five frames of brood. It stored 178 sections of honey, weighing 159 pounds (and that after July 20, in a poor season), being 2⅔ times the average yield of all his colonies. A point of importance is the fact this colony did not swarm, and an inspection every week or ten days showed that at no time during the entire season was there even so much as an egg in a queen-cell. Dr. Miller expects to rear queens from this one during the coming season

The demand nowadays is for BEES THAT GET THE HONEY when there is any to get, and Dr. Miller has such bees. You will want to have a queen from his best, we are sure.

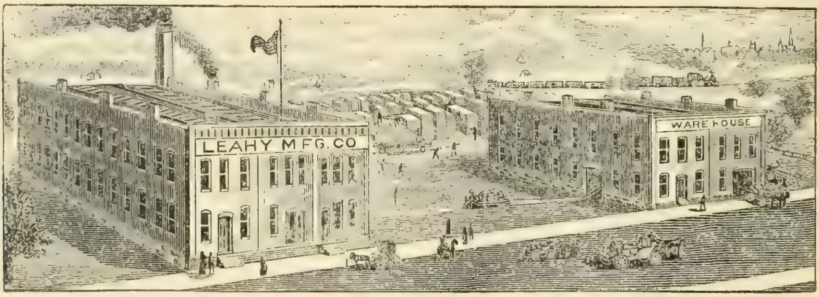
Don't send any orders to Dr. Miller, as all MUST come through us, according to our agreement.

Remember, send us $1.50 for the weekly American Bee Journal for one year, and ONE OF DR. MILLER'S UNTESTED HONEY-QUEENS. Queen alone, $1.00. Orders for queens to be filled in rotation, beginning about June 1st.

Headquarters in Chicago for Bee-keepers' Supplies,

Geo. W. York & Co., 118 Mich. St., **Chicago, Ill.**

Catalog and sample copy of the weekly American Bee Journal FREE. Send for them. Address as above.



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GLEANINGS IN BEE CULTURE

A Journal devoted to Bees and Honey and Home Interests.

Illustrated Semi-Monthly

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STRAY STRAWS FROM DR C. C. MILLER

HONEY POULTICES of honey and flour spread on a linen rag are recommended in *British Bee Journal* for boils, carbuncles, etc., and for injured bones. In my own family, poultices of honey and castile soap have done good service.

D. W. HEISE, speaking of cleaning out hives in spring, makes this point: "Neither should we forget that the less propolis we leave in the brood-chamber the less we are likely to have in the sections." (*Canadian Bee Journal, 197.*)

BE SURE to plant at least three hybrid perpetual roses; say Alfred Colomb for red; Mrs. John Laing, pink; Mad. Geo. Bruant, white. The last is not good full-blown, but the bud is fine and the foliage unusually so. It's a Japanese rose.

THE WRITER mentioned on page 207, who thinks brood-rearing goes on all right 28° below Doolittle's mark, is probably talking about temperature outside the cluster, and Doolittle means *in* the cluster. If eggs would hatch at 64°, wouldn't they roast at 92? [Just so.—ED.]

AS A CONTRIBUTION to the subject L. Stachelhausen has treated so well, p. 213, I may say that I know bees will forage at five days old if forced to it. I shut an imported queen in a hive with frames of ripe brood, but not a bee. Five days later I saw young bees carrying in pollen.

"THE MAJORITY of the queen-cells are built off from a worker cell after cutting it down," p. 221. In this locality that's the case when the queen is taken away, but I think never when bees prepare for swarming. In that case the bottom of the cell is like the left end of that stick on p. 221.

SPEAKING of Holy Land bees, the editor of *Australasian Bee-keeper* says: "For comb-honey producers they are not suitable, for the capping of the comb has a very greasy appearance." I believe that has been the general verdict. If correct, greasy sections are due to bees and not conditions.

THE BOTTOM-BOARDS of my "barns" leave an inch space under the hives. That's not enough for winter. Some of my bottom-boards are 1½ and some 2 inches deep. The deeper are much better. [Two inches deep may be better; but a supply manufacturer would hardly dare jump from the regulation ⅜-inch space under the frames to more than five times that.—ED.]

"IN ANY CASE you should not use frames spaced less than 1½ in.," says *British Bee Journal.* I sometimes wonder whether that may not be better than 1⅜. [A few years ago there seemed to be quite an array of testimony against 1½-inch spacing, and in favor of 1⅜; and if any thing the indications seemed to be that less than 1⅜ would be better than more. The arguments pro and con are all summed up under the head of "Spacing of Frames," in the A B C book.—ED.]

NOW COMES X. Levrier, who, in a series of articles running through several numbers of *Revue Eclectique d'Apiculteur* insists that bees are not needed for fertilization of flowers—Lubbock and Darwin are in error, and seed matures perfectly when insects are excluded by covering. Where are we at? [We are all right; so are Lubbock and Darwin; but X. Levrier is all wrong—that is, if we can believe a great mass of evidence that seems to be almost entirely one-sided in favor of the bees. —ED.]

BEE-PARALYSIS is reported in *The Australasian Bee-keeper* as cured by a number of bee-keepers as follows: To a pound of honey add ½ ounce of a mixture of one part sulphurous acid with four parts tincture of podophyllin. Heat to 90°, and daily spray combs, bees and all. Three to five days' spraying cures. [I almost wonder, doctor, that you did not tell us something about podophyllin. If I mistake not, it is a laxative, and the purpose of giving it to the bees is to enable them to clean out the intestines, which seem to be clogged by this peculiar disease, bee-paralysis. There may be something in it.—ED.]

CANADA has some strong advocates for wintering on full combs of honey with few or no empty cells inside the brood-nest. One advantage claimed is that, with the cells in the cluster filled with honey, the queen does not lay prematurely in winter or early spring. [It has been our practice for a number of years to give our colonies enough feed in the fall so they do not have room enough for even a winter nest. In other words, we compel them to have solid slabs of sealed stores. Although this policy has been questioned somewhat, yet certainly the proof of the pudding is in the eating; for if any one can show better results in wintering outdoors (and I do not mean to brag), I wish he would show his hand.—Ed.]

No, Mr. Editor, I'm not sure that the preference for the one-swarm plan has mainly died away; but there seem to be few advocating it, and there seems to be a general yearning after a non-swarming plan. And I do know that here, and I think wherever there is no heavy late flow, a colony and its swarm do not store as much as the colony that doesn't swarm. [But it does not seem to me that the one-swarm plan has died away at all. If I am not mistaken, there are more bee-books and more writers advocating it than there were a few years ago. What are the books or who are the writers who have gone back on the plan? I do not throw this out as a challenge to you, doctor, but I simply desire information.—Ed.]

"It cost me several years of close application to spell the old way," says Rambler, page 210. That's about as strong an argument as I ever saw against the old way. A man with Rambler's heart ought to be willing to suffer a little inconvenience rather than have all future generations work as he and I did to learn to spell. We may just as well own up that the objection to Bro. York's spelling is prejudice pure and simple. His way of spelling "through" sends a chill *thru* me. But an Englishman has the same chill when he meets "honor" without a "u" in it, and will not read a book, much less buy it, if that "u" is omitted, according to a writer in *Sunday School Times*. [Now look here, doctor. I have promised our readers that we would not say any thing more about reformed spelling, and now you have just "gone and done it." If this stirs up a hornet's nest I will turn the "hornets" loose on you.—Ed.]

Now it's Heise that's rastling with Doolittle's conundrum about the colonies that gave an extra $1.20 because of burr-comb ladders, and he begs Doolittle to give the answer (*Canadian Bee Journal*, *208*). A practial bee-keeper has said to me, "The burr-combs don't make any difference; but the strong colonies that pile in the honey are the ones that make the burr-combs, and those too weak to store much will be free from them. [Say, doctor, why don't you give your own opinion? From the fact that you quote "Practical Bee-keeper" I take it that you indorse his sentiments. It strikes me that he is about right. I have never felt that burr-combs were at all necessary for the production of honey; but it is true that conditions favoring the building of them also favor storing of honey in the sections. With thick and wide top-bars we have very little trouble, comparatively, with burr-combs, and yet with some colonies, and especially if they are strong, there will be a few of them stuck in; but so few, comparatively, that it will make but very little trouble.—Ed.]

Twice in last Gleanings, Mr. Editor, you speak of putting partly worked sections over a newly hived swarm. Of course *you* would put a queen-excluder under the sections, but you don't say so, and some novice will omit the excluder and have the queen laying in sections. [Honey-board? I stopped and scratched my head, and began to think. Neither in the catalog nor in our A B C is there any thing said in this connection regarding the need of a queen-excluding honey-board. Perhaps one is needed when empty frames with only starters are given; but I should hardly think one would be required when empty combs were used to fill the new hive on the old stand, and I incline to the belief none would be absolutely necessary when full sheets of foundation were used, because, in shallow cells on foundation, queens like to lay. As a matter of precaution it might be well to put one on in all cases except when drawn combs were used. I have marked the A B C for the next edition for a little change, for in any case it would be better to err on the safe side.—Ed.]

The *American Bee Journal*, quoting the Tulare *Advance*, says John F. Crowder, from 25 colonies 6 years ago, has increased to 3000 colonies in ten apiaries of 300 each, making him perhaps the most extensive bee-keeper in Central California. Why haven't we heard more about him? [If this statement had come originally from the *American Bee Journal* from a reliable correspondent, I should have believed it. As it is, I can scarcely credit it. While I know California does in some locations support a large number of colonies per apiary, yet I do not believe there is a spot in the world where *10 apiaries, each having 300 colonies*, can be profitably managed. Capt. Hetherington enjoys the distinction of handling the largest number of colonies of any bee-keeper in the world, and his number has been in the neighborhood of 3000 for the last 15 or 20 years. If there is another man who can rival him, let us by all means make his acquaintance. I would write John F. Crowder, but can not find his name on our lists. Perhaps some one in California can give us some information.—Ed.]

You're right, Mr. Editor; indoor bees wintered under favorable conditions consume less than those outdoors. But the question that always troubles me a little is this: Are not the outdoor colonies in some way enough better to pay for their extra grub? [Yes, that is just the feeling I have; otherwise we would have constructed the most elaborate wintering-cellar that could be made to hold our bees, rather than winter outdoors, entailing a larger consumption of stores. There is no denying the fact that our bees come out strong and healthy, and they scarcely ever show signs of dysentery; and in our locality, at least, the outdoor-wintered colonies were considerably ahead of those wintered indoors, both in point of strength and general vigor of the bees. I say *our* locality, I am quite willing to concede that in other locations the comparative results might be just the other way; and yet if I lived where you do, I am very much inclined to think I would put my bees up in double-walled hives, precisely as we pack them here. In speaking about bee-cellars it strikes me that Bingham has got at the right idea of having cellars entirely under ground, without windows, and below the influence of frost and freezing. That is the cellar we would build if we built any.—ED.]

THE CRAZY DANCE in which a single bee may often be seen to indulge on the comb, whirling about in a circle and making a tremulous motion with its wings, is supposed by a writer in *British Bee Journal* to be an endeavor to get rid of pollen dust. I don't know, but I doubt. At times when all the field-bees are bringing in pollen, the dancers seem too few. [It has generally been stated that the "dancers" are the bees that come in with the first load, either of honey or pollen, and that that is the way the first foragers indicate to the hive bees the intelligence of new honey and new pollen. But there are certain young bees that do a good deal of dancing after coming home with the first load. The first load? how do I know it? No absolute evidence, only I surmise it. Early in the season old bees will do considerable dancing as soon as the first pollen comes; then when both honey and pollen are coming in, young bees only will be dancing; and so I have guessed that, so far as they were concerned, they believed they were the first to give the important news, but which, to the old foragers, was stale information.—ED.]

YOU ASK, Mr. Editor, if I know any non-swarming plan practical for every one. If you mean not to have colonies swarm at all, I don't. But I do know a plan for a locality like mine, whereby any one, even with box hives, can prevent all increase and get more honey than by allowing increase. The plan is simply to return every swarm that issues. It would take a lot of hiving, but there would be enough extra surplus to pay for it. [I had supposed that this plan had been almost entirely abandoned as unsatisfactory. I came to the conclusion myself that the most unprofitable colonies in an apiary during a honey-flow were those that tried to swarm and could not, or had made the attempt and were thwarted. To place a swarm right back in the hive from which it came does not seem to satisfy the instinctive longing of the bees for a new home. They sulk, sulk, sulk, day after day. If, however, you mean by the plan that you return the swarm back to the old hive, having taken out the brood-combs and the brood, substituting empty combs or frames of foundation, then perhaps it would be all right. But that would be virtually the one swarm plan which contemplates putting the brood and parent colony on another stand. If, however, we can keep away the desire for swarming by giving plenty of room, giving large entrances, and a reasonable amount of shade, then we have a colony that, other things being equal, will produce more honey than one that has been operated on the one-swarm idea just spoken of. Now, if you know of any way by which you can put the swarm back into the old hive, leaving all the conditions just as they were prior to swarming, so there will not be any sulking thereafter, I wish you would tell us how to do it. I do not say this to imply that you are wrong, but because I desire to get new information.—ED.]

PICKINGS

FROM OUR NEIGHBOR'S FIELDS.

BY "STENOG."

Robins' anthems fill the air,
Bluebirds carol everywhere;
Bees are humming loud their praise
O'er the coming of spring days.

*

PROGRESSIVE BEE-KEEPER.

Concerning the starting of new bee-journals the *American Bee Journal* said:

> The *Western Bee-keeper* was the name of a new bee-paper started in the West a year or so ago. We learn that it has recently turned its subscription list (?) over to the *Progressive Bee keeper*. We did not announce its advent, as we failed to see wherein it had sufficient merit. It certainly was no credit to the printer's art, and we failed to see where it could be of much advantage to anybody—not even to its publisher. This latter opinion has now been verified by its giving up the effort.

To this Mr. Leahy replies:

> We do not admire this style of jumping on to something that is dead. Bro. York's further remarks on new bee-papers are more timely, and we recommend them to the careful consideration of those who have in mind the publication of a bee-journal.

Mr. York's "further remarks" alluded to are these:

> While it is really none of our affair, we can't help feeling sorry for the poor misguided people who think there is money to be made in publishing new bee-papers. In about forty-nine cases out of fifty they have proven to be a delusion and a snare. But we presume we shall see new bee-papers in the future as in the past—with about the usual result.

Mr. Leahy winds up as follows:

> Don't do it, friends. It will only use up your surplus money, and you will be glad to get some one to help you let go. The *Progressive* was run at a loss three years before we assumed control. We ran it at a loss for two or more years; then two or three years more it barely paid expenses; and now after ample experience we are satisfied that the same money and time invested in almost any other legitimate business would pay much better.

*

Mr. Leahy reports good news from all over the country so far as wintering is concerned.

*

BRITISH BEE JOURNAL

Concerning birds near an apiary, Mr. G. A. Barnes says:

> Last summer we were much plagued here with that agricultural pest, the sparrow, commencing operations on the bees. They began in a small way, carrying off only dead bees from the ground, but soon they began to take the live ones, flying off with them to their nests on the house roof. This mischief was brought to my notice by a friend (a game-keeper), who, on passing the hives, had, he told me, seen the sparrows busy on the alighting-board, catching the

> bees as they came in and out, carrying them to their young ones. I thought he must be mistaken with regard to sparrows, but on our going to the hives and seeing the damage they had done, I could hardly think it credible. Being a lonely place they had had a "clear go." The place was alive with sparrows, and, being a lonely spot, they had no disturbers, and probably never before had found food so easy to get as bees. However, after feeding them for a day or two, in a direct line from the bedroom window, by the use of my gun well charged with small shot, I soon reduced their numbers. We then took all the nests we could find, and shot the sparrows whenever we could. I am a lover of birds, but after such a treat as that you may depend on it both tomtits and sparrows will receive a short shrift at my hands. They are welcome to the dead bees and a few live ones too; but I object to them coming in scores and taking them wholesale.

* * *

After having had many recipes for the use of honey internally, I am glad to give the following for making soap:

> Take 1 lb. of best soap; cut it up into thin slices, and put it into a double saucepan, and melt. Add 2 oz. of honey and 2 oz. of palm oil; stir it well, and boil ten minutes. Then pour into molds. A few drops of oil of cinnamon or oil of cloves may be added to perfume it. A good soap can be made by omitting the oil and using more honey.

* * *

Concerning mice in the hive, Mr. Belderson says:

> Looking over my hives in January, after several days' rain, on lifting one roof I found the chaff cover had been gnawed by a mouse. Later in the day as the bees were flying I raised the corner of the quilt to see if all was right. The admission of light disturbed Mr. Mouse, who thereupon put his head out of the entrance to the hive. I thereupon set a steel trap and caught one mouse on the top of the quilts. Next day I found another dead, also above the chaff cushions. This one had died a violent death, as I counted six stings in the head.

BEE-KEEPERS' REVIEW.

Mr. Hutchinson says:

> The value of bees to the fruit-grower and the horticulturist has become recognized to such an extent that, at the last meeting of Wisconsin bee-keepers, one of the horticulturists, who owned extensive orchards, came into the room and offered a site for an apiary, free, to any bee-keeper who would establish an apiary upon it.

* * *

The editor favors a law allowing the owners of foul-broody colonies some compensation for colonies destroyed. That can not be done, probably, as such colonies are of no value anyhow; and if compensation is allowed because the bees contracted the disease, then we all ought to have a pension when we get the grip.

REVUE INTERNATIONALE.

"We have just passed through a very unhealthy winter. Folks are complaining everywhere of coughs, colds, grip, and influenza. And this is not surprising. The temperature makes incredible leaps, not only from day to day, but even in the space of an hour. One day it freezes, and the day after it is so warm that we have thunder-storms not exceeded in violence by those of July and August. Do not forget that honey is an excellent remedy for or at least a mollifier of diseases from which we now suffer. Use it freely; give it often and liberally to your children, and thus avert many ills."—*Translation.*

CALIFORNIA ECHOES

BY J. H. MARTIN.

CALIFORNIA STATE BEE-KEEPERS' ASSOCIATION, HELD IN LOS ANGELES, FEB. 21, 22.

Robert Wilkin, our honored president, and a veteran in the honey business, presided; and, though he had experienced some losses, he held out a hopeful view of the future. In his address he gave us some reminiscences about the early bee-keeping in this State, and it seemed a real pleasure to him to recall the time when colonies of bees were sold for $100 each, and the honey for $1 00 per lb., and also bring to mind the year he went to London with 70 tons of honey.

Sec. McIntyre was not present. Oil is now the craze in California, and derricks are put up and wells put down in all possible places. Drillers were at work upon the secretary's land, and he was watching for the oil to flow. There was not a man in the convention but hoped he would strike it rich.

The comb-honey discussion brought out the fact that cull honey is largely sold in Los Angeles. Dealers who ship honey east ship the best and dump the culls upon the local markets; and when the bee-keeper comes along with a No. 1 honey he finds the cheap article in competition, and it breaks down the price for the good honey. Remedy—produce only cull honey for the home market. Furthermore, the farmer bee-keeper is a producer of cull honey, and, still further, not one comb-honey producer in ten knows how to produce a fancy article.

There was not much complaint manifested about bee-paralysis. There is evidently not so much as there was two years ago, and at the end of two more dry years there will not be a complaint.

Ants are a troublesome nuisance in the apiary. To abate the nuisance, find the nest and pour into it a spoonful of sulphuric acid; or, if the nest can not be found, rake air-slacked lime over the ground.

A noted San Francisco bee-keeper sent in a paper telling how to get the early bee. His plan is to feed in October in order to breed young bees for wintering. That proceeding may be necessary in the East, or in that windy, foggy, and generally disagreeable San Francisco climate; but the plan did not find favor with the bee-keepers of this sunny clime.

Foul brood was discussed. Even dry seasons and dead apiaries will not cure the disease. Steps were taken to improve the foul-brood law, and keep in line with the Eastern States.

A believer in improvements was present, and stated that an uncapping-machine would soon be forthcoming that would uncap six or eight combs at once, and just by pressing a button. The automobile was recommended so strongly that it made a favorable impression. One of the bee-men went right out and tried to buy one. His name was Honey.

A Santa Barbara bee-keeper boasted about the quality of his honey, and stated that he extracted all of his honey before it was capped, and when it was very thin. He ripened it to the proper consistency in the tank.

Eucalyptus is winning golden opinions as a honey-producing tree. Nectar from it is about the only living the bees get during the dry season.

The glad hand was extended to us by Prof. Cook, of Pomona College; Frank McNay, of Wisconsin, and Oliver Foster, from Colorado.

The Union Hive and Box Co. let us know that they were in business, and quite a party of bee-men went out there, and for the first time saw the manufacture of Weed-process foundation.

An addition has been recently made to the already overcrowded condition of the exhibit in the Chamber of Commerce, of a large exhibit from Fresno Co. The fruits and the raisins are nicely set out with a nice case showing several sections of fancy comb honey from the apiary of J. C. McCubbin, of Selma, Cal.

Ridge-Pole Musings

THE USE OF SEPARATORS.

More Honey Without Separators Sometimes, but Less Money; some Pretty Strong Evidence in Favor of Separators.

BY R. C. AIKIN.

This is a common topic. Common as it is, possibly there is room for more on the subject. Among producers that are considered real practical men and leaders, there are yet some who do not use the separator, while in the lower ranks there are very many who do not.

At our last annual convention of the Colorado State Bee-keepers' Association we had a warm discussion on the use and non-use of separators. When the subject had been pretty well thrashed I offered a few remarks, trying in brief to cover the whole ground. We had present the editor of this paper, who was supposed to be taking these discussions to reproduce them; but afterward he asked me to furnish him the speech in writing. I told him I could not do it. I might write the substance; but to reproduce that speech was out of the question; it was gone, and I did not remember nearly all I had said. Two very busy months have passed since, and now I shall try to give my ideas about this much discussed question.

ARE SEPARATORS A NECESSITY?

Most decidedly, yes. It is almost an impossibility to succeed in getting honey in proper shape without them. Give me a good colony, one that can enter and *work the whole super at one time*, and do it *easily;* a good rapid flow that comes steadily; weather regular, temperature right, sections with full sheets of foundation, and I will get a lot of sections so smooth and pretty that many will say they are perfect. They probably can all be cased, at least with a very little care. The variation in weight between sections will be very little. Having accomplished this feat, shall I go into print and say, "As for me I have no more use for separators"?

In 1889 I produced 8 tons of section honey. All colonies were strong, and no swarming; the flow was one of the freest I ever experienced, so that two apiaries averaged 150 pounds to the colony; full sheets of foundation were used, and two separators in 28-section supers. Almost the entire lot of 16,000 lbs. was cased, and almost as it came, without extra care in placing sections—possibly not over 100 to 200 sections so bulged that they had to be left out. That lot of honey was said to be the best large lot that had ever entered the city of Denver to that date. You see it is a possible thing, but not probable, that you will accomplish such a result. Why have I not done it since? I will tell you.

Honey-flows are not all alike. Seasons differ. Colonies are not always the same. In all the years since that one, I have never had such results; and how many more years till I shall have I can not tell. I may have the bees and the weather, but not the flow. It takes the combination of favorable conditions to make it a success, and you may have those conditions once in a lifetime or you may not. Some localities are more favored than others; but, one year with another in the average location, we can not produce what the market demands if we do not use separators. It is out of the question.

But you will ask, "What if some are bulged a little, or uneven in weight?" That question is easy to answer. For your own eating, and for your own "family trade," where your customer buys a case or more, takes it home and uses it all at home, it matters little whether the honey be straight, or even weight; but if the honey is to go into the retail store it must be both regular in weight and all within the wood. Much has been written about dealers selling by weight or by the piece, and considerable has been said about a section for a certain price.

It is the custom to sell groceries by the piece or *package*, as in cereal preparations, coffee, tea, butter, fruits, salt; and now even crackers, cookies, and all such come in *retail packages*. The goods not put up in packages and retailed that way are altogether the exception. The demand is for packages that sell by the piece. It is absurd to think of producing honey so that it must be sold by weight, one section for 8 or 9 cts., another for 10, 11, or 12, etc. It is also absurd to talk of producing a section that will sell for a *certain price* (that hits you, Mr. Editor); for just as the supply and demand vary, and prices fluctuate, and as at any given general price different localities vary in their retail prices, owing to closeness or distance from the producing point, prices will *ever* be a varying quantity. My ten-cent section here or in Denver must cost more when sold in fancy markets of Chicago or New York.

We must produce so that our honey will sell by the package, both at wholesale and retail. Owing to the ever varying conditions under which we must produce honey, slow, intermittent, or irregular flows; even a flow that is as steady as clockwork, but slow; or a fine free flow interrupted by irregular weather; or a swarming colony; or different managements, etc., will make it *sure* that there must be crooked combs particularly bulged and uneven weight, in the best-managed apiaries. If we can not produce year by year with a reasonable certainty without separators, we must use them.

Even when we use separators we shall have uneven weights. It requires the most skillful management in very many seasons and localities to get nice section honey—sections that will weigh *even* one year with another, one colony with another, and one part of a season with another part. But while we can not have complete regularity in weight, we *can* have the honey all *within the wood*, and an approximate unanimity of weight, by the use of separators. That the honey be within the wood is important, primarily to aid in equalizing weight, and principally for safety in handling. Even practical apiarists will have accidents marring cappings by the comb faces touching, or coming in contact with the adjoining section or case side, etc.; and if we who have both practice and a first interest do such things, how much more the inexperienced!

I have handled a great many carloads of honey, both my own producing and of others; have also seen many other carloads, and I know that, even though the use of separators lessened the amount produced, that *with* separators is worth more money. I am at this very time selling some honey produced without separators. It is the leavings after the best was picked out, and the producer was glad to get 5 cents a section for it. He had about 75 cases all told, and from the 75 he sorted out the best to the amount of about one-third or a little more, and this best third brought him 20 cents per case less than the great bulk of mine and others produced with separators. My poorest grade of separatored honey brought more money than his *best*, while my poorest brought very nearly double his poorest.

It is but fair to say that this comparison is of one new in the business as against my years of experience; but there were others more nearly equal in experience, but using in part separators, and the difference in favor of their use was from 10 to 20 per cent. I know a man who says no separators for him, he would not use them. I once asked the privilege of shipping a small lot of my honey in a car he was shipping, largely of his own production. He consented that mine should go in if it was nice No. 1 goods. So urgent was he that I put in only nice honey that I used great care in grading, and even left off my name and address, lest I should get the wrong kind of advertising by having it on; but when I loaded the honey you may guess my chagrin to observe that I had the nicest lot of honey in the whole carload. Mine was separatored, the rest not.

Let those who advocate no separators go into the markets and handle honey, either at wholesale or retail, and they will be cured of their error very quickly. When you think of whether you will or will not produce with separators, just ask yourself what you would prefer were you in the retailer's place, and you can soon settle the question.

But you say you can get more honey without than with, and it means more money to you. You are wrong. Bees will just as readily enter a super with separators as one without—often, weak colonies *more* readily. A few bees can cluster between separators and work a few sections, when if they were to start in a larger compartment they would not do it; or if they did they would spread into more adjoining sections and *finish fewer* of them. Strong colonies will take your whole super, separators or no separators, and store just as much with as without; but the weak colony is the one that will do the very poorest work, bulging and irregular, and are the ones of all colonies that *must have* separators if we get a No. 1 article from them.

Now figure as you will the cost of separating; extra time cleaning and casing nonseparatored; bulged thrown out; faces marred in your own or retailers' hands; difference in prices paid for the various sorts; loss of trade by crooked combs disgusting dealers when they are broken, and all the factors bearing on the subject, and you will use separators.

Loveland, Col.

[It is true, that Mr. Aikin gave one of the best talks on the use of separators I ever heard or read, and I accordingly asked him to write it out for GLEANINGS.

With regard to the ten-cent honey, and the friendly "dig" you make at the editor, I think if you would look up what I have said in the matter you would see that I had reference to a particular locality and to a particular season. It would be folly to think that the same sections could be sold from year to year for the same money.

I think you are quite correct in saying that a weak colony will do better in a separatored super than in one without separators; but when the colonies are strong, then the results seem to be reversed.—ED.]

AN OLD THEORY EXPLODED.

Rich young Drone married poor Virgin Queen,
  People thought they were not well mated;
She was spry, industrious, and clean,
  He all kinds of work fairly hated.
But to lie around she soon understood
  Better than Drone, the work-shirker;
But strange! After rearing their young brood,
  Though Drones, every one was a worker.

TWO LITTLE SPRITES.

BY EUGENE SECOR.

Capture and bring me the two little sprites
That haunt every corner of grandmama's house ;
Don't let them go till I feel of the mites,
And hold them as tightly as pussy a mouse.

Phantoms of airy-like figures flit by,
With tresses of brown, but wind-tangled all day ;
Bright eyes that peep out like stars in the sky,
And smiles that are sweeter than blossoms in May.

Marks of their fingers are left on the pane,
And remnants of rag babies litter the floor ;
Kitchen and pantry are not sought in vain,
For good things are always kept somewhere in store.

The cookies and sweet cakes from grandma's are best,
And freedom is valued as though it were bought—
(Urchins away from the motherly nest
Forget to keep quiet as they have been taught).

Fairies they are that *convince* one they are
Real tangible things that appeal to one's mind ;
Press their impress on dull lives which are far
Removed from the orbit of their sprightly kind.

Welcome the antics of these little elves—
They carry us back to the days that are gone ;—
We of the gray beards would like it ourselves
If time past high noon could be turned back to dawn.

Life is a poem where childhood's pure song
Is echoed with laughter from parlor and hall.
Let the old world and its mad bustling throng
Move on while these midgets my spirit enthrall.

GENERAL CORRESPONDENCE

TRAVEL-STAIN NOT CAUSED BY THE SALIVA OF BEES.

Breeding out the Swarming Impulse; what has Already been Accomplished in the Vegetable and Animal Kingdoms by Careful Selection and Breeding.

BY J. E. CRANE.

In GLEANINGS for 1899, page 353, is an article by S. P. Culley in which he advances a very ingenious theory as to the cause of travel-stain. He says it is caused by the saliva of the bees, which first turns the combs yellow and then black, as tobacco does a pipe. I have had no occasion to change my view on this subject. During the past season I have had but few combs but were badly stained; not only were the outsides of the cappings stained, but the inside as well, and all the way through them; and not only the cappings, but the combs also, from center to circumference, and all through one side to the other; but as the color corresponded very closely to the color of the pollen of the white daisy, on which the bees worked freely, returning to their hives well covered with its yellow dust, I was led to believe this to be the cause.

Most of us have found that the amount of saliva depends on the amount and quality of food; but Mr. Culley says it is right the other way with bees—a very ingenious adaptation of theory to the condition of things. I am not going to quarrel with him about it—only disagree—that is all.

Further on he takes me to task for comparing the swarming instinct of bees to the sitting instinct of hens, as I did a year ago in the office of GLEANINGS; and then he proceeds to throw cold water on my pet hobby of a breed of "non-swarming bees."

Now, lest Mr. Culley and other readers of GLEANINGS should think that the arguments which he puts forth have squelched me, "I rise to say" that I still believe, not only in the possibility of producing such a breed, but also in the practicability of it for those sections where the harvest lasts as a rule from two to four weeks only.

Mr. Culley says: "Is Mr. Crane really sure that the swarming impulse or instinct is rightly compared with the sitting impulse or instinct?" (Quite sure.) "Bees are different from chickens." (I believe it.) "There is the colony which perpetuates itself by brood-rearing." (Just so.) "Then the increase of colonies requires swarming." (No doubt of it.) "The comparison involves some fine points." (Not necessarily.) "But inasmuch as the bee can not live an individual life, as chickens do, the question is whether the swarming instinct is not allied to the propagating instinct, which is universal and ineradicable. From this point of view one might contend that the production of a breed of non-swarming bees can be compared only to the production of a breed of fowls that fails to propagate."

I presume so; but that is not my point of view. He goes on to say, "If it can be proven that the swarming instinct is comparable with the propagating instinct of fowls rather than with the sitting instinct, then Mr. Crane's argument fails; for non-sitting, we believe, results from an increase of propagating or egg production." I doubt it. The question is, whether a strong natural instinct can be bred out. If we were to admit his theory I can not see that the swarming impulse is any more a propagating instinct than the desire of birds to sit on their eggs, and thus increase the number of families or individuals.

J. E. CRANE.

He continues: "There is a limit to man's control in breeding to produce certain results." (I am with him here.) "He can produce a cow that gives *more* milk." (I have extracted the sweet lacteal fluid from the well-filled udders of many such); "a sheep that bears more wool" (I have seen thousands of them); "a strain of bees that gather more honey" (it is in the air); "but has he ever produced a new trait, or been able to eradicate a primary instinct?

How about the various traits of dogs or pigeons, as in the pouter or tumbler that have been developed by man, and by careful breeding have become hereditary? How about the Sea Island cotton that was brought from the West Indies as a perennial plant, yet in the hands of skillful planters, by careful selection, has become an annual of great value?

As for eradicating a primary instinct, how about the incubating instinct of certain varieties of gallinaceous birds? Has it not been largely eradicated? Is it not a primary instinct?

"He can manipulate what already exists, but can not create." Just what we propose to do—manipulate the swarming instinct for something more useful. And as for the rest, with the almost unlimited new varieties of fruits, flowers, and plants; with Prof. Loeb rearing fish from spawn fertilized with chemicals of his laboratory, instead of the sperm of the male; and Prof. Emile Lung producing frogs of either sex at will, it looks as if men came perilously near being able to create.

Mr. Culley continues: "Possibly the swarming instinct or impulse can be bred out" (I am with him again), "but probably it can not" (I say, probably it can). "The possibility justifies the trying." We agree again, most perfectly. But I notice that Doolittle has put on his specs and is looking over my shoulder, saying, "What is that?" and with a look that expresses the sincerity of his convictions he repeats, "Bees swarm because in the beginning the Creator told them to multiply and replenish the earth." Quite true; but when they, with the kindly assistance of man, have already multiplied, and the earth is, hereabouts at least, quite fully replenished, shall they keep on multiplying, much to their own and man's disadvantage? Having fulfilled the law, are they any longer under the law? If they have been assisted by man in fully replenishing a given territory, shall not man now, by careful selection, teach or restrain them from further colonization schemes?

But I see I am digressing. Mr. Culley concludes his paper by telling how to produce a non-swarming strain of bees if it can be done. He says, "If it can be done at all, keeping them from swarming by dividing, etc., for years—for generations and generations of bees, till they 'forget,' so to speak, and the swarming idea, because not using nor needing it, would seem to be the method to adopt in order to produce non-swarmers."

Well! If we take this method of doing it I do not think I shall hazard my reputation as a prophet in saying it will never be done. I should say, as he does, "Probably it can not." But this method does not help matters at all. It simply changes natural to artificial increase; and this must be continued for many years, perhaps fifty or one hundred, without knowing how we are likely to come out in the end; and I am sure no one would have the patience. No, no! let us go at it in a scientific way, in harmony with natural law that has produced most marvelous changes in both animal and vegetable life—the law of selection.

How shall we begin? Let us select a queen two years old for a breeder. If we can find one that has not swarmed in that time, so much the better, provided it has stored honey with the best, or is as productive as any other. If we do not have such a queen, let us select as nearly as possible. If every colony in the yard has swarmed in previous years, let us take the queen of the colony that stored most honey before swarming, or has swarmed latest in the season, for we want to develop the storing instinct at the expense of the swarming instinct if possible. If we pursue this method for two or three years we shall most likely find some colony that has not swarmed for that length of time, and proves to be one of our best honey-producers. Now let us use this one for rearing all our queens for, say, two years, should she live as long. Very soon, unless bees are an exception to all vegetable and animal life with which we are acquainted, we shall be able to find colonies with a pedigree; i. e., we shall find colonies that are two years old that have not swarmed, nor the colony from which their queen came. Presently, and it may not be many years, we shall have a queen to breed from whose ancestors in the line of queens have not swarmed for five or six generations. Such a queen, if mated with drones of similar parentage, should produce queens that, when properly mated, would give rise to colonies but little inclined to swarm. If two or three or more yards could be run on this line, and queens changed from one to another, it would help to overcome any evils likely to arise from too much in-and-in breeding.

If, as Mr. Culley intimates, the lessened sitting instinct among certain breeds of hens comes from an increased egg production rather than any direct efforts of breeders to produce a non-sitting fowl, it proves the correlation of parts, showing how, by increasing development in one way or part may change it in other ways. When Mr. Vilmorin changed the wild carrot from an annual to a biennial he changed the character of the root, increasing its size as well as its time of blooming. Some with whom I have talked seem to think that, to produce a race of non-swarming bees, would be to weaken the race and their productive capacity. It does not seem to me so. Yet the breeding for color has seemed to do just that. But increased capacity for honey-gathering, or an increased instinct for gathering, seems quite in line with a weakened swarming instinct, as increased egg-production appears in connection with decreased incubating instincts.

So far as my experience goes, or I can remember, many of my most productive colonies have been those in which the instinct for honey-gathering seemed to overshadow the colonizing impulse; and they worked right on, very largely forgetful of the command to "multiply and replenish the earth."

Middlebury, Vt.

["Rearing fish from spawn fertilized with chemicals of his (Prof. Loeb's) laboratory" is a sentence that astounds me. If it came from the pen of any less authority than Mr. Crane I should class it as "rank heresy;" and, even though it seems to be credited by our friend, I can not help feeling, nevertheless, that it is almost on a par with the canard of a few years ago when it was claimed that eggs could be manufactured, and even *hatch chickens* without feathers. It was thought that some ingredient had been omitted by the chemist, but that he (the chemist) would soon perfect his artificial eggs so that they would hatch chickens *with feathers*. Perhaps I do not understand. However, the rest of Mr. Crane's article is good, orthodox, practical, and scientific.—**Ed.**]

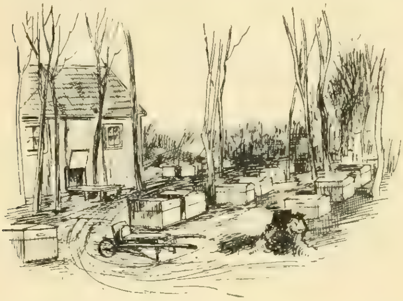
BEE-KEEPING FOR WOMEN; HOW TO AVOID HEAVY LIFTING.

A Valuable Article from one of the Most Extensive Lady Bee-keepers in Colorado.

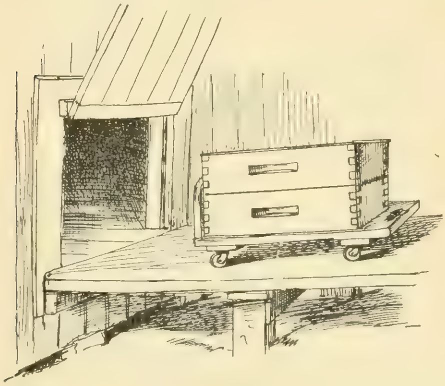
BY MRS. A. J. BARBER.

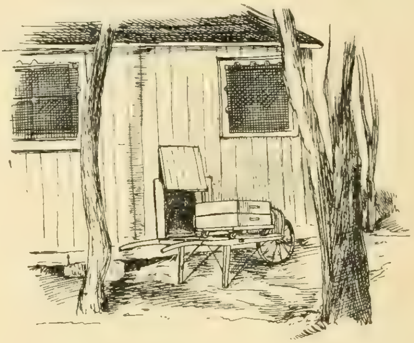
My first practical work in producing extracted honey brought me face to face with two very disagreeable things. These were, lifting the boxes of honey, and working among as many bees as we had to let in when we opened the door to take the honey inside the house.

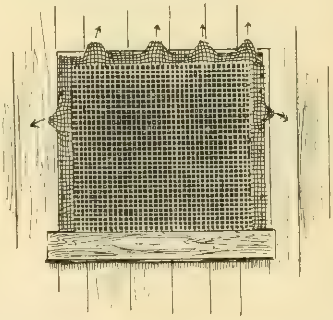
I finally tried the plan of putting common bed-casters on a board made to fit upon my Daisy wheelbarrow. Upon this board I put my honey-box and run it into the honey-house without lifting at all. I had a small door made, and had the hinges at the top instead of the side. Under this door is a small platform sloping gently toward the house with the outer edge just as high as a Daisy wheelbarrow. The illustration will show how the honey goes from the wheelbarrow into the house.



When I get ready to take off the honey I put a wheeled board on my wheelbarrow, and put an empty hive-body upon it, and with smoker and broom begin to take out my frames. Most of the bees are shaken and brushed off, the combs put into the hive-body, and, when it is filled, I run it into the house without having to lift more than one frame at a time or letting the bees that always follow me get into the house. After the first load or two my helpers have some empty combs. These are put back into their boxes still on the wheeled board, and shoved out so that I return them at once and use the same board and box to get another load. In this way the hives are closed up so there is no robbing. I have only three boards at each apiary, and they are all I need. In using the half depth frames for extracting I do not disturb combs, but take the whole super. My hives are all set in pairs or threes so that I can use one for a table while at work with the other. When I raise the super I set it on the next hive until I replace the cover, then the super is stood on end with the bottom projecting over the front of the hive. I raise from 12 to 20 in this way, and then begin at the first one and smoke the tops of the frames a little to drive the bees through. When most of them have come through they are swept off with a few strokes of a Coggshall broom; and as they fall in front of their own hive they are all right. As fast as they are cleared of bees the supers are taken, two at a time, and run into the honey-house. We use the same plan taking off comb honey.







When taking off honey, those hives that have not filled their combs are marked; and next day, when extracting is out of the way, they are looked over and dealt with according to needs. Sometimes a poor queen is removed and a better one given, or the colony may be broken up and given to new colonies to help them out. We have the tops of our windows arranged with bee-escapes, made of strips of wire screen. The few bees that get into the honey-house have no trouble in getting out, as, on extracting days, we take out the sash so that there is only the screen in the windows; and, though it is all home-made, and not very pretty, it is quite effective in keeping bees out and letting those inside get out. These simple contrivances have saved me a great deal of backache and many bee-stings.

Mancos, Col.

[I have already referred to the fact that Mrs. Barber is one of the most extensive bee-keepers of Colorado. She is not only engaged in business extensively, operating a large number of colonies, but she makes a real success of the business, or at least it was so reported to me when I was visiting in that State. Hearing of her everywhere I went I wrote her on my return, asking if we might have the pleasure of a series of articles detailing her methods, and how she managed to do so much of the work herself. The one above is the first one of the series, and it is so intensely practical that I know our readers will be especially pleased to learn of her methods from which, no doubt, a large part of her success comes.

MRS. A. J. BARBER.

Her method of taking off honey without doing heavy lifting I know is practicable for we use the same plan in handling lumber. Railroad tracks run all around among our lumber-piles. A large push-car is placed in front of the lumber-pile. On this car is another smaller one with small wheels. On it the lumber is piled. The two cars, one riding on the other, are then pushed up to the end of one of our large buildings, and the car on top of the lower one is pushed off, as it were, on gangway planks, which land it on a platform in front of a big door. This opened, and the whole load is pushed in front of the big planer, making one handling of the boards, for the pile can be moved to the most convenient point for shoving through the planer. All this may seem a little aside from the subject of bee-keeping; but it shows that Mrs. Barber and the Root Co. have been working on the same principle—the one to handle heavy loads that are converted into hives, and the other to handle heavy loads that come out of those same hives.

One who can use his head as well as his hands is worth three of one who can use his hands but has no ability or faculty for economizing labor. Mrs. Barber seems to know how to use both her head and hands. There are a good many people who have good heads, but never think of trying to discover a short cut. The difference of working with hands alone, and working with hands and head, makes all the difference between success and failure in almost any business, and this is especially true of bee-keeping.

This Mrs. Barber is the one who told our readers, about a year ago, how to produce both comb and extracted honey at the same time, off from the same hive, and how to use extracting-combs for baits to draw bees up into comb-honey supers. The article was commented on very extensively, and copied in nearly all the bee-journals, and now is given a permanent position in our A B C of Bee Culture.—ED.]

A BEE-KEEPING TRUST PROPOSED.

Trust against Trust; Fighting Fire with Fire.

BY W. L. COGGSHALL.

Brother Bee-keepers:—Combinations seem to be the order of the day. The object is to get a better price for their output, and that is what the bee-keepers ought to do. If we can not do that, do the next thing best—correspond or give our bee-journals the opportunity to know what the yield is in your location. I am aware that the California association has done a great deal of good in that direction. I will give you a little of my observation I made this year.

I knew from the bee-journals I read that the honey-crop was light all over the country. Therefore early in the season I wrote several letters to the leading bakeries, offering my honey, buckwheat extracted, at 6 cts. F. O. B. What was the result? They all wrote me back, offering me 4¾ delivered, saying they were *restricted* to pay only so much (baker's combination or trust, if you please). I tried the same scheme six weeks later. Well, the bakers had found out that the honey market was higher, and they were willing to pay 5 cts. a pound. Mind you, the prices were exactly the same at each bakery, *and they were instructed to pay that and no more.* Combination again.

Brother bee-keepers, I only wish we were business men enough to keep our heads together and form a combination, or do the next best thing—keep each other posted on the yield. I should like to get the experience of the bee-keepers. Perhaps some of the old heads might map out a way by which the bee-keepers can keep in pace with the trusts.

I see by to-day's paper that the Standard Oil Co. has made the largest dividend ever made—$20,000,000 on $100,000,000 of stock worth $538. Think of it, my friends.

West Groton, N. Y.

THE BENEFITS OF CO-OPERATION.

How it Keeps up Prices in California and Colorado, and Nets the Producers more Money.

BY F. E. BROWN.

The benefits that we have received by associating are many, and we are ready to give others the benefit of our success. In the past ten years, with the exception of the last two, we have had a very perplexing problem to solve—how to get our just return for our honey at a price that is not far below its actual market value. We have been dependent upon our local buyers for our product, for this reason :

We produce in less quantities than carload (as individuals); hence we have been obliged to sell locally or suffer a loss in freight rates ; and if we ship to San Francisco (as it is altogether out of the question to ship to the eastern market in lots less than carloads), small lots are usually consigned ; and the results are what they are to almost everybody who has had experience along that line. So we have usually sold our honey to the local dealer who would pay cash to us, and buy for as little as the goods could be obtained, and, in many instances, very cheap. I know of parties who, after extracting a few cases of honey for the first time in the season, took it to town, as they wanted money very badly ; and the buyer soon discovered this, and would take advantage of the producer's circumstances, buying the honey at from one-half to one cent below the market value at the time of the sale. The next man who took in honey to sell would be told that he was buying honey at *such* a price, and could not afford to give more; so the price was established for some time, at least, upon the circumstances of the man who had to have money.

Another heavy loss by the old plan was in the tare, as we were at the mercy of the buyer, and obliged to take the tare that he dictated, amounting to about $30.00 on the carload, all of which we now save.

The way we now proceed is to elect a business manager, contract all of our season's output to him (arranging to pay him for his time and expenses); he is to sell in car lots for market value, and return to you net proceeds. Not having a warehouse to store in for the association, each producer who has signed contracts is to report to the manager at each extracting, with a sample of the honey extracted, together with the number of cases represented by said sample. The honey is stored at home. When the manager gets reports enough to assure a car of such honey as he is offering to market, he will order the honey brought in to the place of shipment, where the car is sold or shipped for delivery. The producer gets the cash at about $10.00 a ton more than he usually gets.

We have this year produced and marketed 13 cars of extracted honey on the above-mentioned plan. The buyers abroad will make offers for a car of honey, asking what the grade is, and very often will inquire what is the tare. We always quote exact tare, and find no trouble in thus selling ; and in allowing exact tare there is no one hurt ; but some set up the howl that there is an established tare in the eastern market, and if they buy at exact tare they will have to lose in the deal ; but by standing firm I have had no great difficulty, and in no instance have I lost a sale by standing for the exact tare.

Hanford, Cal., Dec. 11, 1899.

[The bee-keepers of Colorado have combined in a similar way, and have secured results that are so far very flattering. Had it not been for the Association, Colorado honey during last year, when there was a scarcity, would have netted the producers scarcely more than prices of the former year, when there was plenty. As it was, Manager Rauchfuss shoved the Colorado honey-market clear up, notwithstanding that some of the large commission-houses tried to bully him down. He stood firm, and made them pay *his* prices, not theirs. See Prof. Cook's article, page 273.—Ed.]

GOOD BEE LOCATIONS IN CUBA.

A Wild-goose Chase for them, Remote from Foul Brood, and within Easy Access of the Markets.

BY HARRY HOWE.

When I started for Cuba it was with the idea that all I had to do to get a good place for my bee-farms was to find some unoccupied space and stay there. This delusion was quickly dispelled by learning of foul brood. This led to a study of the present limits of the disease, which is by no means completed yet. But about this time I saw that one of the three apiaries under my care was doing much the best. Then inquiry showed other apiaries doing still better, while walks in the fields showed that there was a good reason for the lack of honey in two of my apiaries in the shape of the absence of flowers.

We are only eight miles from Havana, on one of the fine roads leading from the city. As it chanced, the big cattle-dealers selected this neighborhood as a sort of receiving station for their stock. Now, at that time cattle came in at about 2000 per day, and all were very hungry. Cattle do not usually eat the aguinaldo (bellflower); but these did, and every thing else green. At one time there were 10,000 in sight from one hill. This brought up the question of special troubles to be looked out for.

Then, as my Spanish began to improve, came long wheel rides and visits to every bee-man I could hear of where I arrived with a big bundle of questions. Owing to the total absence of roads outside of the fine stone military roads, locations for Americans narrowed down to spots near railroad stations and a strip along the stone roads. Of these there are only about 200 miles all told; but they are the finest it is possible to make—perfect for wheel-riding.

Then came the foul-brood problem again. Only two of these roads lead out of what was clearly known as the foul-brood district. A ride over all of them showed only about six locations where there was room for more than one apiary not already occupied outside of the foul-brood zone. In many places one could ride for miles and not see a single flower of aguinaldo—nothing but waving grass and a species of palm not good for honey.

Then came a study of railroad locations; but a five-minute conversation with a general freight agent fixed that. One cent a mile per 100 pounds was about the figures. This would not allow one to get out of the foul-brood zone which extends around Havana, and get enough for his honey to pay freight. There is also a strip around the coast where they can freight by water, which I did not look up far. I wanted to be where there was mail once in a while. This reduced me to one of the six locations which I now proceeded to study in detail, and grade as nearly as I could. By the time this was done I had been four months at it, and had come to the conclusion that there were more places where bees would starve than there were where one could get twenty gallons to the hive as some have done this year.

Of the six places I soon decided which stood first, and then came the real trouble. The unit of land measure here is about 33 acres, and I could not rent a less piece, and rent is high here. Finally, however, I got two places rented, and began to feel easy, when the owner of the one on the best bee location sent word that he had sold out to an American syndicate. As my patch was near the middle of the farm of 36 square miles I was out of it, and at the present time I have not been able to rent another place.

In addition to the location, the possibility of getting bees for seed came in. Mr. W. W. Somerford was at the same time engaged in a search for bees, and in the five months we have been able to buy only three small lots. I have at the present writing 83 colonies which I have transferred into modern hives.

The bee search revealed two things: 1. The great scarcity of bees; 2. The presence of foul brood in all sorts of unexpected places. There is, of course, a very large amount of the finest bee country in Cuba. I have traveled for miles through a perfect tangle of honey-bearing plants, but it would cost more to bring out the honey than it would to raise it. In the good time to come, when Cuba has roads, or when the railroads are compelled to carry freight at a decent price, there will be great chances to raise honey here. At present the good places are few indeed, all things considered.

San Francisco de Paula, Cuba, Feb. 15.

[All of this is very interesting to me, as I am planning to make a trip to Cuba next fall. Whether I shall go on a wild-goose chase with our friend Harry remains to be seen; but this much I should like to do—take a trip on their good roads, or where they are good, rather, and see something of the country. From several sources we learn that foul brood has gotten a terrible foothold in the island; and the fact that there is a great deal of ignorance on the part of many native Cuban bee-keepers makes the situation a good deal worse. Intelligence, coupled with the right kind of legislation, is the only thing that will keep this dread scourge in check.—ED.]

FOUL BROOD IN CUBA.

A Good-natured Burlesque: the Folly of American Bee-keepers Rushing to Cuba; Cuban Honey will Never be a Competitor of American Honey, and Why.

BY GEO. ROCKENBAUGH, JR.

Now that Florida is in the old ruts, as she was in 1896, a good many of the so-called bee-keepers, or would-be bee keepers and fruit-growers will turn their eyes to Cuba, and probably some will carry their household goods with them, bees and all, before coming here to look for a location. I can almost imagine I see a shipload of bees and hives coming now. Those who contemplate coming here need not carry any bees with them, as the woods are full of them; and as to locality, one can squat down in any old place and it will support 200 or 300 colonies providing he takes foul brood in the bargain. The expenses in coming to Cuba are very slight. The railroad companies charge 10 cts. per mile, baggage extra, and the ship companies have only doubled their rates in the last three months. Living is also cheap here. Carne de vaca (or jerked beef) is 26 to 36 cts. per lb.; American salt pork, 12 cts. per lb.; flour, $8 00 per barrel; coal oil, 40 cts. per gallon; common shoes, $5.00; cotton prints, from 12 to 15 cts. per yard. Eggs are 60 cts. per dozen; spring chickens $1.20 per head.

The Pan-American and Cuban express charge enormous prices. You prepay express charges in the States, and you will have to pony up here again on a package of garden seeds weighing 6 lbs., $4.22. But, enough of preamble.

In the Philadelphia meeting of last fall I think the discussion ran high about Cuban honey overstocking the American market. Not so, my friends. There never will be enough produced to supply New York city. Foul brood has finished this island for good. I have gone 300 miles on horseback in an unbroken country, and mountains that line the north coast, and resemble the Sierra Nevada. Sometimes I would stand in the saddle for half an hour, going up and down at a break-neck speed. I have inspected some 30 native apiaries, numbering from nothing to 75 log gums, and have yet to find one that is not rotten with the disease. I have been as far south as Santa Espiritu, west to Caibarien, and find every thing in the same condition.

The so called Florida freeze has not affected this island at all, though a stiff wind from the northwest blew for 48 hours, dropping the mercury down to 52, while at Jacksonville it was 16, and Tampa 26. The natives tell me that ice half an inch thick was formed here in 1856.

American bee-keepers will never succeed here while the natives carry it on in a slipshod way by using log gums open at both ends. When a swarm is hived in one of those logs it takes up its abode in the center of the log, and builds its comb at one end; and when this is full the native smokes them to the other end, and in that way the queen is supplied with new comb every three months. While the log is open on both ends the foul brood can not overtake it as in an American hive, where the queen makes her home on eight or ten combs at all times.

I have tried to cure the disease, both with medicine and by transferring, but have made a failure so far. Probably some of our foul-brood doctors will give me some light on this question, as I have not read any bee-periodicals since 1897.

A crack shot puts the question thus:

How far should one lead a cross-flying quail if the gun is swung as rapidly as the bird is flying, and the shooter is reasonably quick on the trigger? A Canadian apiarist once asked me how far one should lead a cross-flying foul-broody swarm with a McEvoy hot-blast smoker.

Santa Cataline, Cuba, Mar. 3.

[This seems to be quite in line with the previous article by Mr. Harry Howe; and it would look as if for the present, at least, American bee-keepers had better keep off the island until conditions are materially improved.—ED.]

CONVERSATIONS WITH DOOLITTLE.

SOMETHING ABOUT USING EMPTY COMBS. COMBS VS. FULL SHEETS OF FOUNDATION.

"Good morning, Mr. Doolittle. I came over to have a little talk with you about combs. Can you give me some idea in regard to them, how to use to the best advantage, etc., as I am a beginner in bee-keeping? Did you have all the combs you desired at first?"

"Glad you called, Mr. N. When I first began keeping bees there was no such thing as comb foundation, hence whatever comb we had had to be built from the start by the bees. My bees at that time would persist in building more or less drone comb, which I would not tolerate in the hives to any extent beyond a piece as large as the hand, therefore I was short of combs, and was often obliged to work colonies for comb honey with as few as six Gallup frames in a hive."

"How many do you now use?"

"Nine. But in those days it was thought that a hive should contain at least 2000 cubic inches in the brood-apartment in order that the best success might be had."

"What success did you have?"

"My bees increased so fast, which, with my determination to allow little drone comb in the hive, kept me for years so I did not average seven Gallup frames to the hive, this being less than one frame more than half required to fill a hive of 2000 cubic inches; and for this reason I was *compelled* to lay the foundation for what is now known as 'the contraction system.' The success obtained by the use of these few *all-worker* combs led me to give the matter in print, and from such beginnings we have the contraction system of to-day, practiced by many bee-keepers who hive their swarms in a brood-chamber containing only about half the comb space of those used by our fathers."

"How did you manage this comb-building matter?"

"As I wished to make the most of my bees, they were allowed to build comb in the brood-apartment of the hive till the yield of honey came on plentifully, at which time the sections were put on, after shutting the bees, by means of division-boards or dummies, on to as many combs as they had completed up to that time. Thus, in 1874 and '5 I obtained an average of over 100 pounds of box honey in each of the two years, per colony."

"What did you do with the drone comb you took away?"

"The drone comb was taken away before any bees had matured in the cells; and in this way I obtained my starters for the sections, filling some of the sections entirely full where I had enough of such nice white drone comb to do so."

"And you used these filled sections as 'baits,' did you not?"

"You have guessed it exactly; for these filled sections were placed in the center tier of sections for each hive, and in this way the bees were coaxed into the sections much sooner than they otherwise would have entered them."

"What did you do where frames were partly filled with both worker and drone comb?"

"Where frames were partly filled with drone and partly with worker comb, I bought up all the nice clean worker comb which I could find, from parties that killed their bees in the fall for honey, and from those which died during winter, often paying as much as 25 to 30 cents per pound for it; and, after cutting out the drone comb from my frames, I fitted worker in its place, thus preventing the bees from filling the same space again with drone. After this, if any I had bought was left, I fitted it in frames for use where most needed, often using pieces not more than four inches square, soldering them together, and holding them in place in the frames, with melted beeswax, till the bees fastened all securely together."

"Do you think such a plan would pay at this time?"

"In these days of comb foundation it is doubtful whether it would pay to fuss with pieces of comb, even if they cost nothing, unless it might be by way of laying a stone of economy, as one that might be necessary, in the foundation for the future of any life which would otherwise tend toward extravagance. However this might be, I think that, to melt up fairly good combs, as some do, and buy foundation as some recommend, is very poor policy."

"Where we allow the bees to build their combs, when should it be done?"

"Much loss is always sustained by letting our bees build comb in the brood-apartment of the hives during the best of the honey-flow, unless it is new swarms having the hive contracted to a few frames. The time to build the comb is when honey is coming in moderately, not only as regards the saving of honey, but because more worker comb will be built when honey is coming in slowly."

"How about the new swarms you hinted at in your last remarks?"

"Early in my commencement in bee-keeping I was obliged to buy comb, as I told you, as there was no foundation then, nor could I buy combs built in the frames, or get my bees to build enough before the main harvest for them to rear brood in while at work in the boxes; but later I struck on the plan of giving my new swarms only five frames; and as soon as these were filled with all-worker comb I spread them apart, putting in each alternate space an empty comb, so that the hive was filled out in time for honey and bees sufficient for successful wintering."

"Did not five frames make a hive too small for a large swarm of bees?"

"If the swarms were too large to work profitably building these few combs, sections were placed around and over them, so they could work in these, thus losing no time to the bees. In these experiments I found that I could secure a third more honey from a swarm treated in this way than from one building the whole hive full of comb during the height of the honey-harvest, besides securing nearly or quite all straight worker combs in each frame given. There is nothing of more value in the apiary than *good straight* worker combs, except good prolific queens."

"From what you say, I judge good worker combs are of more value than I had supposed."

"Such combs are of *great* value, and should be looked after with care when away from the bees, and the larvæ of the wax-moth should not be allowed to spoil them, as very many of our bee-keepers so often allow."

"But is not comb foundation just as good or preferable?"

"Some seem to have the idea that comb foundation is preferable to frames full of comb. This, I think, is a mistake, for I know of no spot or place where they are as good, for the bees must consume some time in getting the foundation worked out to full combs, saying nothing of the expense of buying it, or the time taken in putting it into wired frames. To my mind, a nice straight worker comb, built true in the frame, from foundation or otherwise, is worth double the same amount of foundation."

In bee-keeping, as well as in any other business, prosperity comes only in husbanding what we already have, and being careful of the outgoes. Foundation is good in its place; but the sheet-anchor of bee-keeping is all straight worker comb; and if you have such, use them in place of having the bees build more, or of buying foundation.

HEADS OF GRAIN FROM DIFFERENT FIELDS

WHY THE RECENT MICHIGAN FOUL-BROOD LAW WAS DEFEATED.

Referring to your recent article about the foul-brood law (and its defeat) in the last legislature of our State, I wish to say that I had much to do with defeating it. My reason for doing so is this: In my judgment we now have all the law needed on that matter. All that is needed is its enforcement. The law now provides for an inspector in *each* of the counties of the State. It seems to me this is much better than simply to have *one man* for the entire State. Wherever foul brood exists, have your agent appointed *on the spot*, or wipe it out. I think this anxiety to get the law changed to *one person* is that some fellow at the capitol may get a job—only this and nothing more. I wish you would publish the present law, of which I think I secured the passage, and see if you need any thing else. Enforce this, and all will be well.

HARMON SMITH.

Orleans, Mich., Feb. 20.

[In our issue for July 15, 1897, page 525, we give the full text of the foul-brood law to which you refer, and which has been on the statute-book since 1881. At the time that Mr. Hilton sent it to us (at our request) he said of it, "I consider it a splendid measure. . . . It has never been amended or repealed, and is to-day in full force." I have again read carefully the whole law, and consider it a very excellent measure for the suppresion of foul brood. This law provides that, upon the petition of five bee-keepers, addressed to the judge of probate, the latter shall be required to appoint a competent commissioner, resident of the county, who shall make the necessary investigation, and receive for his services for each full day actually employed the sum of $2.00, and $1.00 for each half-day.

There may be, according to this law, a commissioner appointed for each county, providing, of course, the disease is supposed to exist in such counties.

There are some advantages in a law of this kind. It saves the expense of railway mileage of inspector to distant parts of the State, and, if the disease should be pretty well scattered, it might not be possible for one person to do justice to all sections. On the other hand, it might be said that it would be difficult to find in each county a bee keeper who would be thoroughly competent to decide when the disease was actually present in the hive, and how to treat the same. There are many competent bee-keepers, but only a few, comparatively, who understand how to handle foul brood. In favor of a law like that just now in force in Wisconsin, by which one inspector is appointed for the whole State, and receives $4.00 a day and other expenses, it may be urged that this person can be and probably will be the best man in the whole State; and foul brood has scarcely ever made such headway in any other one State that one person could not get to see every affected yard.

The county plan is in force in Colorado, and I believe it is giving general satisfaction. The plan of having one inspector for the whole State is giving excellent results in Wisconsin. Taking everything into consideration, I believe I should be in favor of this kind of law; for an inspector who gave a large percentage of his time would make it *his business* to find foul brood wherever it existed, and stamp it out by the most approved methods. It would be a matter of pride to show *some results* from his labor.

All things considered, it strikes me that our friend Mr. Smith rather went back on his bee-keeping friends. The present foul-brood law has been in existence since 1881, and that notwithstanding the disease has been making headway throughout the State. Those who favored the new bill on the lines of the Wisconsin law probably felt that something better should be on the statute-books; for then one man would *feel the responsibility* of the situation, and *see that something was done.* I am inclined to think, friend Smith, that the bee-keepers of your State will be after you with a sharp stick; and on the other hand I can see how you acted honestly and from the best of motives.—ED.]

DO QUEENS LAY IN QUEEN-CELLS? WATER-BEES.

1. Do queens lay eggs in old queen-cells, or do bees move them there when they want to rear a queen? A few days ago I put a frame of eggs in a queenless hive, and on looking in later I found an egg in an old queen-cell that was empty when I put it in (they matured the egg to a queen).

2. Do bees have regular water-bees, or do all go for water? If they do, how do they water the queen and drones? CHAS. LONG.

Fowler, Cal., Feb. 16.

[1. Under some circumstances queens will lay in queen-cells; but I believe that, as a general rule, the cells are supplied by the bees, with eggs or young larvæ removed from worker-cells. The circumstance you relate is not an uncommon one.

2. I never supposed there were regular water-bees, although this may be true: Some bees in a colony will make a specialty of buckwheat, others of white clover, still others of pollen, and perhaps others of water. It is possible that all of these perform all the different kinds of work named. Some one made observations along these lines a few years ago, and the results of these investigations were published; and, if I mistake not, the writer believed certain bees performed certain kinds of work—that in other words there was a division of labor among them. I would suggest those who have observatory hives make this a matter of observation. In order to arrive at any thing like satisfactory results, there should be only one nucleus or colony of bees in the locality.—ED.]

GREASY SECTIONS DUE TO THE QUEEN; A CASE IN POINT.

I have read the articles in the March 1st issue, on greasy sections. Having kept, for the past 20 years, from 50 to 200 colonies of bees, and most of them run for comb honey, I have had some experience "along that line," as Doolittle would say. I remember one colony in particular, the bees of which would insist on soiling the cappings of the honey, making it appear watery and greasy. This particular colony was a well-marked Italian, with a very yellow and prolific queen. All the honey in the brood-chamber had the same greasy appearance. As this was one of my best honey-gathering colonies I was loath to part with it; but it made no difference whether the flow of nectar was slow or fast, the honey had the same greasy appearance. I finally put on two sets of combs, and used them for extracting. The honey was very ripe and heavy, weighing fully 12 lbs. to the gallon. If any of the fraternity have any queens to dispose of because their bees do not make cappings with an air-space between the honey and cappings, I am willing to pay the cost of mailing and caging such.

Rochester, Mich., Feb. 7. J. M. KINZIE.

GREASY SECTIONS DUE TO CONDITIONS OF WEATHER.

I see "Greasy Sections" are being held up to view. Well, let us investigate. This is an interesting subject. Dr. McLean and I do not materially differ. I have not passed through any thing but *hot dry* seasons, and, of course, could note nothing such as he speaks of in the mountains; but any thing that retards a honey-flow gives riper honey and will produce the result. Mrs. Barber says her "yellow" queen gives bees that get more honey in the same time, and white cappings. Well, that tends to prove my position; i. e., that the more rapidly the honey is gathered and capped, the less likely it is to be greasy, other conditions being favorable; but, on the other hand, we find the greater number of bee-keepers who say that the black bee caps honey whiter than the Italian. Now, all these different opinions have been more or less jumped to without careful, continued investigation, after taking into account all the conditions which I think are more varied in bee-keeping than in any other rural pursuit.

Kankakee, Ill. W. M. WHITNEY.

SWEET CLOVER IN TEXAS; IS IT A "BAD WEED" ON THE FARM?

I had about 30 acres of my farm in sweet clover in 1898, and it paid me over $3.00 per acre, which is a good rent for average land here. I have about 28 acres this year, and I would continue it on my farm if it were not for my neighbors' bees, which get as much honey as I do or more. About the last days of May, 1898, the bees were without stores, very little brood, and quite weak; yet the crop of honey taken that year paid me over $100, besides keeping it on the table all the time for six or eight in family, and the principal part of the crop was from sweet clover. It makes good pasture in early spring, and, if turned under after blooming, it will tell on a wheat crop.

Last summer, while breaking the clover land, I fastened a piece of domestic cloth on and above my disk plow, and caught quite a lot of the flying seed while plowing. I have been sowing the seed all around the fences on the farm. I prefer raising honey instead of weeds and bushes. J. H. RODERICK.

Dodd City, Tex., Feb. 28.

CONTROLLING SWARMING AND AVOIDING INCREASE.

I have a few hives of Italians (less than half a dozen), and run for comb honey. I try to go "by the book," and the book is Root's A B C. Now, as no increase is wished for, please tell me what is the best way to avoid increase. In early spring, when I get the bees to breed they get very strong; and instead of going to work they swarm out about April 1. This is not desired. W. P. DANNER.

Beaufort, S. C., Feb. 16.

[I would advise you to catch or kill your queens at the approach of the honey season. This will prevent swarms, and at the same time check brood-rearing and thus avoid rearing a lot of bees that would be useless consumers later on. But after the queens are destroyed, it will be necessary for you to go through the colonies carefully to cut out all the queen-cells in eight days. And in eight days it will be necessary to perform the same operation again. In order to get every cell it may be advisable to shake all the bees off the combs, otherwise you are liable to miss one when combs are covered with bees. For particulars regarding this, see "Prevention of Swarming," in the A B C of Bee Culture, which you have.—ED.]

CLEANING MOLD FROM EMPTY COMBS.

Will you kindly let me know which is the best way to clean empty combs (for extracting) of mold, so that they could be used again? Only a part are moldy, and this not much.

Escondido, Cal., Feb. 23. L. MARNO.

[If combs are a little moldy, ordinarily no harm will be done. When you need them, set them right down in the center of the brood-nest, and the bees will soon clean them up sweet—much cheaper than you can, even if you could do it. Combs should ordinarily be stored in a dry place, subject to a freezing temperature in winter. This will kill the moth-miller eggs and larvæ, if there are any; and if they from that time are kept in a tight box or room they will be ready at any time, sound and good.—ED.]

DRONES IN EARLY SPRING; DO THEY WINTER OVER, OR WHERE DO THEY COME FROM?

In setting my bees out of the cellar on the first day of March I saw as many as fifty drones. They came from several different hives, and seemed perfectly at home. To-day was a nice warm afternoon, and there were a good many flying. I do not remember seeing any accounts of drones being wintered over, and thought it might be a matter of some interest. My bees did not kill off the drones last fall, or at least not nearly all of them, as many were flying every warm day in November.

A. A. BONNEY.

Tygh Valley, Ore., Mar. 5.

[As a rule, drones in hives with queens are killed off just as soon as the honey-flow ceases; for the bees seem to recognize that they can not afford to keep around a lot of useless consumers; but a month or so after the wholesale slaughter there will be a few more drones reared, perhaps a dozen or two in a few colonies, and these are usually left unmolested. It is these chaps that are allowed to go through the winter; for the bees seem to recognize, also, that if the queen is lost there will be no drones during the coming spring for the young queen. But drones are reared, even in winter—that is, providing it is not so cold as to prevent the rearing of ordinary worker brood. Here and there will be a larger cell, and in it will be a drone grub along with the other worker larva. These drones are not molested, and are allowed to remain unless stores in the colony are very short; in which case the bees will be liable to lead their "dads" out of the hive "by the ears"—at least they sometimes look as if they were doing that very thing; for there will be two or three workers tugging at one poor unfortunate drone. He is then held at bay just at the entrance, and, no matter how he struggles to get in again, he is ruthlessly pushed back by the mere force of numbers against him.—ED.]

HONEY RESOURCES OF CALIFORNIA; AN EXAMINATION OF THE STATE BY COUNTIES.

After some twenty years spent in traveling through the central and northern part of California it strikes me that my observations in regard to the section as a location for prospective bee-keepers might help out friend Martin's article.

Down in the San Joaquin Valley is a large tract of alfalfa land stretching from Kern to Merced Cos. In Fresno Co. the field is overoccupied (at Selma). In Tulare Co. there is still a large area unoccupied. Going north there is a section in Sacramento, Placer, Sutter, Butte, and Yuba Cos., where a limited number of apiaries could be started. These are all valley locations. Back of these are the mountains. In the hills of Fresno are a number of small openings; Mariposa the same. In Tuolumne a large number of bees are kept in one section. The higher altitudes are without bees. In Calaveras Co. few bees are kept. There is a small strip along the rivers, in the lower end of the county, that would support several small apiaries. Amador Co. is better, especially in the valley—more alfalfa. Eldorado Co. has a few good openings in the mountains. Apiaries lower down have not been a success. Nevada Co. has but few bees, but an excellent local market. Several small apiaries could be run to a profit in it. Sierra Co. is mostly mountains. What few apiaries are located in the county do very well. Plumas Co. (the Switzerland of America) is a paradise in summer. Bees will do well there. Lassen Co. is similar to lower California, owing to its being partly covered by the desert of Nevada. Sage and clover grow in great abundance. In the San Joaquin and Sacramento Valleys you are right on the line of the main railroads. Mariposa Co. is away from the railroad. Tuolumne, Calaveras, Amador, Eldorado, and Nevada Cos. have branch lines extending into them. Sierra and Plumas Cos. are off the line Lassen Co. has a branch road, now being extended.

During the summer months it is as hot in one part of the State as another. In winter the mountain counties have more or less snow, especially Lassen, Plumas, and Sierra. You can go "from snow to roses" in an hour's travel in any of the counties bordering the mountains. The flora is varied, with an altitude of from 200 feet above sea-level in the foot-hills to 4000 feet but a few miles above. All climates and flowers can be found.

California is a very poor market for honey. The bulk of it must be shipped. Since the California bee-keeper must pay freight on his supplies from the East, and on his honey to the East, it is evident that a location east, near the base of supplies and market, will yield a greater profit than can be realized here.

If we could have a "good" year every year it might be possible to produce an excess sufficient to more than counterbalance the freight charges; but with only one good year in five the East has the best of the situation. Why doesn't some one go north, say to Montana, where people eat honey, have the money to, and do, pay good prices for it?

Murphy's, Cal. E. H. Schaeffle.

STUNG TO DEATH; A CORRECTION.

On page 89, Feb. 1, you published an article headed "Stung to Death by Bees," which is far from the actual facts in the case. The facts as told me by a brother-in-law of Mr. Carson are these. Mr. Carson went to his apiary before breakfast, to do some work with his bees. He was stung four times — once on the temple, ear, wrist, and thigh. He went to the house and requested his wife to get a veil, as the bees were cross. In a few moments he said he would go outside, as he felt faint. He went out and sat down on the porch and died there. There was no sulphur burned. Mr. Carson had heart trouble, which, combined with the stings, upon an empty stomach, the doctor says, was the cause of his death.

Alliance, O., Feb. 17. G. E. Martin.

SALABILITY OF SECTIONS; NOT HOW GOOD, BUT HOW CHEAP; DEAD BEES IN CELLAR-WINTERING.

A good deal has been said of late on the subject of square vs. tall sections, and some very good arguments in favor of both kinds have been put forward. I have kept bees for over 35 years: have produced tons of honey made in all sorts and sizes of boxes, from the one holding 10 to 15 pounds down to the 4¼×4¼ section. The first single-comb box I ever saw I made and used myself. Most of my honey has been peddled, very little ever going to commission men, and none in later years.

I have yet to find a customer who will pay any more for a section of honey on account of its "good looks;" but I recall many who would take a "homlies" lot if they could get it a little cheaper. Given a tall and a square section of the same quality, the customer may take the tall one if he can get it at the same price; and the wholesale purchaser, if offered a lot of each, will take the one he can buy at the lowest figure, and will take both lots at the price of the cheapest.

When you find a man who will pay me a better price for a section of a certain shape, he can have all of my custom if he wants it. The fact is, in my experience consumers do not care so much for the looks of the article, provided the quality is the same, as they do for the price.

The question is asked by some one, "How many dead bees will be carried from a cellar in which, say, 100 colonies of bees have been wintered?" My experience is, there will be from 60 to 90 quarts for that number of colonies, and I might give you a long dissertation in words and figures as to how I arrive at that conclusion. I now have 83 colonies in the cellar, and I have never seen as few bees on the cellar bottom at this time of year as there are to-day, and they were put there the last day of November; but outside it is the stormiest day we have had during the present winter, and we all know that, from this time out, they will die off much faster than in the past.

Lawrence, Ill., Mar. 6. J. L. Anderson.

[It would appear from the figures above given regarding dead bees that my estimate of the number that might be found on the cellar bottom, as given on page 804, for 1899, and page 179 for this year, was not very far out.—Ed.]

1. What is a good way to introduce virgin queens to nuclei, and about how many will be accepted?

2. What is the depth of the Langstroth frames you make—I mean from top of top-bar to bottom of bottom-bar? J. C. C.

[1. I would introduce virgin queens just the same as I would ordinary laying ones; but virgins are always harder to introduce, and a larger proportion of them will be lost as compared with those that are fertile.

2. The standard Langstroth frame is 9⅛ inches deep, outside measure.—Ed.]

EVERGREENS FOR WINDBREAKS FOR APIARIES, GARDENS, ETC.

Mr. Root:—As you have had experience in planting an evergreen windbreak, can you give me some information about it? I should like to plant one to shelter house and bees from the north and west; soil is sandy, running out to heavy loam. It is difficult for me to get trees from the woods. Would it pay me to go a considerable distance, rather than buy from a nursery?

What kinds would you advise purchasing, and what size of tree? How many rows are necessary? how far apart for the rows, and for the trees in the row? and is it necessary to cultivate them for a few years?

FREDERICK H. CLARKE.

Coleman, Mich., Feb. 21.

[Friend C., I would not get evergreens from the woods, even if they were near by, because you can get transplanted trees grown and trained in the nursery so much better and so much cheaper. On page 190 of GLEANINGS for March 1 you will find an advertisement of one of our largest and best dealers in evergreens. Trees a foot high cost only $3 00 per 100. I think our own cost about $5.00 per 100; they were planted about 20 years ago, and are now almost *too* large (40 to 50 feet high and some of them over a foot through), if any thing. We have tried them at different distances. Only one row is necessary if you let the branches come out clear down to the ground, which they will do in a very few years. The Norway spruce is very hardy, and a very rapid grower. We have not lost one tree in 100, and these would not have been lost had not water been allowed to stand around their roots. Trees 10 feet apart in the row (as ours are) will make a windbreak for bee-hives rather quicker than if a rod apart; but in a few years, where placed so closely, it will bother you to get through them if you should happen to want to. One who has not tried it would hardly realize what a difference it makes during a windy time. One can work in comfort when shielded by evergreens. when it would be very tedious if not dangerous to undertake the same kind of work where the wind has full sweep. A windbreak around a home, the barns, poultry-house, etc., is not only a great comfort, but a positive saving in feed for stock as well as a comfort to the owner. The nearer you put the trees, the sooner they make an efficient protection; but they are more apt to be crowded so as to die out as the trees get older.—A. I. R.]

ECHOES FROM THE WISCONSIN CONVENTION; TALL SECTIONS.

Wisconsin is not and has never been any great comb-honey producer, most of her bee-men having become convinced that markets, prices, and the amount of product being considered, extracted pays them better. Nevertheless, there was interest enough in comb-honey production to bring out a lively discussion on the merits and demerits of tall sections, 4×5, as compared with 4¼×4¼ inch. Although your humble servant defended the tall section as best he could, there seemed to be a decided majority against them. But when a show of hands was called for of those who had tried them the number was small indeed, and there seemed to be a confusion among the members between no-beeway sections and 4×5 sections when this point was not really under discussion.

The points claimed for tall thin sections were—better finish, quicker sealed over, hence more product; also looks better; therefore will sell for more. The reasons urged against them were—cost of extra fixtures, cost of extra foundation, and a general unwillingness to help supply-dealers.

KEGS AND BARRELS V. CANS.

This came up for a tussle, and here, as well as on the tall sections, Wisconsin would have none of the cans. The strong point against cans was cost, and inconvenience of handling when full. Dealers are unwilling to pay more for honey in cans than in barrels. These arguments are all valid; but, on the other hand, the leakage and loss from soaking in the wood is no small matter on barrels amd kegs, and I am sure that dealers who supply honey for family use would soon appreciate the difference between liquefying that in cans and that in barrels.

Moral.—Know your customer, and suit your package to your trade.

There was one entirely new feature introduced into the convention—a debate on the following:

Resolved, That contraction is better than expansion for spring management of bees. Affirmative, Harry Lathrop; negative Jacob Huffman. The debate was quite spirited and interesting from first to last. The affirmative claimed that all weak colonies should be tucked up close—i. e., contracted and let alone, while the negative claimed that they should be expanded by brood from strong colonies. Successful bee-keepers adhered to both sides, which shows that the same result may be attained, and the same point reached, by entirely different routes. The point here aimed at is strength of colonies, and whether this can best be attained by bringing strength from others at the expense of the colony robbed, or to let them develop strength from within.

At the close of the debate Secretary France brought down the house by presenting the contestants with a tray of honey-cakes made by a Wisconsin biscuit company. May be he thought they needed refreshment after their exhaustive efforts.

One other feature which I am sure you and all friends of bee culture will be pleased to know is that the whole convention joined the National Bee-keepers' Association. May it live and prosper until fraud, adulteration, and foolish prejudice are all wiped out.

Richland Center, Wis. C. A. HATCH.

I commenced keeping bees in the spring of 1886 with one colony, for which I paid $5.00. I have been strictly in the business ever since. I now count my colonies by the hundred, and sell honey by the ton. F. B. JONES.

Pease, Minn., Mar. 8.

EDITORIAL
BY
E. R. ROOT

EIGHT extra pages this issue.

NO COMB HONEY IN THE MARKETS.

THERE never was a stronger demand for comb honey than now. In fact, we do not know where there is any to be had, either of this year's crop or last. The universal reports of good wintering give us encouragement to believe that we shall have at least good strong colonies, and good markets for comb honey. Now, then, if we can have the right kind of season with nectar we shall be "in clover" sure.

THE NEW-YORK SPRAYING LAW.

In my editorial, page 178, March 1, with regard to the reported attempt to change the spraying law of New York, I made Mr. Marks say that the amendment provided that experiments might be made by experiment stations and *by individuals.* Mr. Marks calls my attention to the fact that, in his original letter concerning the matter, he said nothing about "individuals." I therefore make this correction.

I am much pleased to say, however, that the amendments have been so amended that there will be no objection to the bill, if it passes, on the part of bee-keepers; but while legislators are in session, it behooves us all to watch and see what they are doing. That is the only way we can prevent unnecessary and often vicious legislation.

CUBAN BEE-KEEPING IN A BAD WAY.

THE American bee-keeper who is thinking of migrating to Cuba to carry on his chosen pursuit where he may have thousands of acres without danger of overstocking, and where, perhaps, he indulges the fond hope that he may be able to produce honey and deliver it to the American markets for half what he can produce the same grade on American soil itself, would do well to read carefully two articles in this issue—one from Harry Howe, and the other from Mr. George Rockenbaugh. From several sources outside of the parties named I learn that foul brood has gained a terrible foothold on the island, and it will be many a year before bee-keeping, probably, can be conducted on a safe and profitable basis. At present, American bee-keepers need not fear Cuban competition—that is, if we can rely on what several correspondents have said.

THE CONTAGIOUS CHARACTER OF BLACK AND FOUL BROOD; THE IGNORANCE OF BEE-KEEPERS.

AT the New York State convention, Mr. Benton, who had been pretty well over the districts affected by black brood, laid particular stress upon one point, and upon which too much emphasis can not be placed. It was, that he found that some bee-keepers whom he had visited, and in whose apiaries this disease was found, seemed to be utterly ignorant of the character of contagious diseases. They did not realize the importance of keeping combs and honey away from affected colonies where healthy bees could not get at them; nor were they particular about disinfecting utensils and their hands after handling the diseased colonies. The same precautions necessary to prevent the spread of foul brood should be observed in the case of this disease. Mr. Benton recommended rubbing vaseline on the hands just before beginning work with the bees, and then washing afterward in a solution of carbolic acid and water; or formaldehyde and water, using one per cent of the chemical.

NIVER ON GRADING; POKING A LITTLE FUN AT THE EDITOR.

THE following letter, just received from Niver, the grading man and honey salesman, will explain itself:

> *Friend Ernest:*—When glancing over GLEANINGS for Mar. 15th my attention was called to page 225, and the pictures of sections adopted by New York bee-keepers as their guides for grading. President Marks evidently understands the system, and has a good lot of pictures—better than the ones I presented to the societies last year; but I am *astonished*—not to say *shocked* at the comments E. R. Root, "ye editor," indulges in on that same page. Just study on this boiled down concentrated extract of clearness:
>
> "There is just one difficulty with this picture-grading. It is very difficult to select three sections, the poorest of their grade, each of which shall be an average of the poorest."
>
> Say, Ernest, just try it on a case of No. 2. Hunt out the *poorest* section in the whole case that will also be an *average* one. If it's an *average* section it will necessarily be *better* than the poorest, won't it? Just imagine the two "Docs" (Miller and Mason), and myself (we would be three of a kind—all like to laugh), watching you struggle with that problem—or paradox—of making a poor section and a better one equally good!
>
> The *average* of a No. 2 would be at least half way to the No. 1. The *average* of No. 1, in like manner, would be half way to the "fancy," while the "fancy" would have nothing *poorer* than the section shown in the picture, and run from that to the extra fancy or the "stuffed prophet," as Morton used to call them.
>
> This grading by sample is very easy in practice, and can be made fairly uniform from the specimen pictures, if we all agree to sell nothing *poorer* than the No. 2 represented on page 225. Any bee-keeper can select the other two samples, after once deciding what No. 2 shall be, and this picture is all right to guide him in that important decision.
>
> I contend that it is of more profit to the bee-keeper, and to the business as a whole, to extract every section that isn't fully as good as the No. 2 shown on page 225 (the one on the right-hand side, of course, I mean, not the middle one, which is a No. 1).
>
> Groton, N. Y., Mar. 21. S. A. NIVER.

Look here, Niver, you are altogether too literal in your construction of language. I grant that the sentences under consideration from a technical standpoint might be considered paradoxical. What I meant by the "average of the poorest" was that there might be in one grade a dozen or so sections which we might call "poorest." One would be poor from one cause and another from some other, and so on each of the whole dozen would have some serious defect which would class it with the poorest of the poor. But the point I tried to make was that, if we grade by pictures and select the poorest of each grade, we should select as our sample one out of the whole dozen that would represent fairly the *defects of all the poorest*.

You still think I am inconsistent and paradoxical, eh? Well, now, suppose you, Dr. Miller, and myself, and a few others who are always at loggerheads on this question, each take what we consider the poorest of the No. 2 grade. We might have different notions of what constitutes the poorest, and we therefore might each select a section all different. Suppose that, instead of three of us, there were a dozen, and each had a different section, all of them "poorest," but just good enough to be dumped into the No. 2 grade. Now, then, what I meant was that whatever section was used as a pattern should be a fair average of our selection. See?

FIGHTING FIRE WITH FIRE; BEE-KEEPERS COMBINING THEIR INTERESTS TO MEET THE COMBINATION OF ORGANIZED BUYERS OVER THE COUNTRY.

In view of the fact that great trusts have been formed, so-called, and that men of a trade have combined to protect their interests, it seems as if it were a matter of self-protection on the part of bee-keepers of different States to pool their interests. I am not advocating trusts or combinations or pools; but the bee-keepers of Colorado and California have been and are placing their combined products in the hands of a secretary or manager for each State, with the most gratifying results. The manager of each exchange fixes the price of honey for the whole State; watches the market; looks after the interests of the associated members in a way they could not do individually—prevents individual bee-keepers from cutting prices against each other for the sake of securing trade, and prevents avaricious commission men and large buyers from coming in and getting choice car lots at a low figure, thereby forcing all other bee-keepers to sell at the same low figure.

I happen to know that Mr. Rauchfuss, manager for the Colorado organization, has not only fought against large moneyed firms, but has had backbone enough to tell them, when they have tried to "bluff" him, to go ahead and do their worst. One concern who, having bought one or two cars of honey at a certain stipulated figure, I am told, tried to make him admit that he had *agreed* to sell the rest of the honey at his disposal for the same money. When he insisted that he had not entered into any such agreement, the traveling-man threated to sue the association. He told him to go ahead. It is needless to say that the buyer brought no suit, but finally paid Rauchfuss' price, which meant a good many more dollars to the individual bee-keepers of Colorado, with the further result that prices in general were shoved upward, as they should have been, with the probability they will be held there, even if they are not shoved up higher. There can not be a doubt but that prices would be lower in Colorado to-day but for the fact that the intelligent, progressive bee-keepers of that State placed their honey in the hands of a competent man to do the business for them. At another time, if I am correctly informed, a certain buyer went through the State to get all the honey he could, stating that he could buy at less figures than Mr. Rauchfuss offered. The latter, having a list of the members of the exchange, sent out notices to all the members, explaining the situation, and advising them not to sell at less than a certain figure. Well, when Mr. Buyer went around to buy at his own price he found that he had *run against something solid*. He could not budge one of the members; and the result was, he bought at Mr. Rauchfuss' price, which was considerably in advance over the figures he offered.

There is a great deal of so-called bluff in the business world, and it needs to be met by business experience and integrity and by business backbone of a kind that knows its rights and legal limitations.

If buyers are organized to get honey as cheaply as possible, how can producers working *independently*, and often *against each other*, hope to get good prices?

I do not know that it is possible to form honey exchanges in any of the States except where large amounts of honey are produced. I should not think such an organization in Ohio, for instance, would be practicable; but in New York, Arizona, and Utah, where *large amounts* of honey are produced, a good deal might be done, with the general result that it would tone up prices in those States where smaller aggregate yields are produced.

I am not advocating high prices to the detriment of poor people; but every honey-producer knows that honey has been sold at a lower figure for the last few years than it ought to have been. The business of bee-keeping requires skill and good management, and, unlike many other occupations, it is very uncertain. In view of this, there ought to be financial returns commensurate with the labor, skill, risks, and capital involved. In other words, it ought to command as good wages as other avocations requiring a like amount of brains and time. There is a good deal on this subject elsewhere in this number that is to the point.

ADULTERATION IN THE EAST; THE NEED OF PURE-FOOD LAWS, BOTH STATE AND NATIONAL; A WARNING.

The following extract from a private letter from a bee-keeper who is well up in the honey business, and who understands thoroughly the buying and selling of honey, tells a rather sad state of affairs regarding the Eastern markets. Read it carefully, and then write your Senators and Representatives, urging them to support any national pure-food measure that may come before them. At the pure-food congress which assembled during the fore part of February, preparations were made to draft and present a bill which will probably come up for consideration in both House and Senate in the near future. Do not fail to write at once. The extract from the letter, omitting all names, reads as follows:

Gentlemen:—The writer was in New York yesterday, and found the extracted-honey market in very bad condition. Messrs. ——— have 2500 double cases in storage, and $3000 borrowed on the same. Messrs. ——— have a big stock consigned, and Mr. ——— has also a good supply. It appears the National Biscuit Co. have not bought yet this year; when they do it generally makes a big hole in the market. There is a new enterprise started on the east side in which they are adulterating by the carload honey which will granulate in three days. It has the appearance of and tastes very much like honey; has about 10 per cent of the pure article in it. Twelve carloads have been turned out in the last 60 days. It sells for 5½ cents per pound.

The National Bee-keepers' Association is doing every thing in its power to stem the tide of adulteration of honey; and we hope that, in the near future, it will present some interesting and startling facts. The condition of affairs revealed in the extract above should merit the careful consideration of every bee-keeper — especially those who have not joined the National Association, one of the objects of which is to make the mixing of glucose dangerous and unprofitable. Membership costs only a dollar, and one does not know how far that dollar will go when combined with other dollars from bee-keepers far and wide.

The state of affairs as indicated above shows that extracted honey may be a glut on the eastern market this coming summer; and if bee-keepers in that portion of the country are wise, they will turn their attention largely to the production of *comb* honey, which can not now be bought in the open market for love nor money. It is gone, absolutely; but pure extracted honey is a glut in the same markets, just because twelve carloads of the adulterated stuff have been turned loose within the last sixty days, and which sells at 5½ cts.

I am placing this letter, giving the full facts, names and address, before General Manager Secor, of the National Bee-keepers' Association, hoping that he may be able to do something to stop the rascals who are perpetrating this wrong on the bee-keepers of the East.

CAMERAS FOR HALF-TONES.

ON page 141, Feb. 15, I criticised a paragraph of Mr. Hutchinson's in the *Bee-keepers' Review*, relating to the above subject, where he said that an ordinary kodak was of but little value for use in taking half-tones, for the reason that the lens was of a universal or fixed-focus type, and that, therefore, the picture thrown on the plate would be only "passably sharp." As I had used quite a number of this class in GLEANINGS, taken with the universal-focus kodak, and as some of them, I thought, were excellent, I took our brother-editor to task. The latter, instead of replying in his next number, laid the whole matter before the editor of the *American Amateur Photographer*, Dr. John Nicol, an acknowledged authority on cameras and lenses. Among other things the doctor says:

> *Mr. W. Z. Hutchinson*:—A lens at fixed focus would give as sharp an image as one that you focused, *but only of such objects as were at the point for which it was fixed*. All lenses have a point at and beyond which all things are in fairly good focus, the distance depending on the length of the focus and the size of the stop employed. The shorter the focus and the smaller the stop, the nearer that distance. So called fixed-focus lenses in cameras are generally placed a little within that distance, as the eye can not distinguish between lines less than $\frac{1}{100}$ of an inch apart, so that with, say, a 5-inch lens, every thing at and beyond 25 feet will be to the ordinary eye in fairly good focus. But, as already said, only one thing, or one plane, will be in perfect focus, and all nearer and beyond only a compromise; while with a lens that you can focus, or, as you say, with your head under the cloth, you can focus, at *any* distance, and that not a compromise but a perfect focus.

This I referred to the Eastman Kodak Co., who, though an interested party, stated that neither Mr. Hutchinson nor myself had got at the real root of the matter, and that "Dr. Nicol came very near putting it plainly. Theoretically, Mr. Hutchinson and Dr. Nicol have entirely the best of the argument. Practically, fixed-focus cameras are the most desirable within certain limits. . . Our experience, then, has taught us, owing to the mistakes liable to be made in focusing, . . the amateur is more certain to get good results with a fixed-focus camera, provided the size of the picture is not greater than 3½ by 3½. . . . Dr. Nicol states in his letter, 'The eye can not distinguish between lines less than $\frac{1}{100}$ of an inch apart, so that, with a five-inch-focus lens, every thing will be to the ordinary eye in very good focus.' Now, so long as it is in focus to the eye, what is the use of microscopic definition?"

I should be glad to publish the whole of the correspondence in which Mr. Hutchinson and myself have been greatly interested; but as we are both publishing bee-journals, the whole text of the correspondence, probably, would not be interesting to bee-keepers, and I have therefore endeavored to give the gist of the whole.

In doing so I hereby acknowledge that Mr. Hutchinson, from a theoretical standpoint, was more nearly correct than I; and while I use an adjustable-focus camera for most work, yet there are certain conditions, times, and circumstances, when I can use a small fixed-focus camera, and get some beautiful effects—something that could not be secured at all with the ground-glass tripod focusing-cloth camera requiring an expenditure of five or ten minutes to adjust the focus, etc. Some subjects in their best poses remain so for but an instant, and their unconscious bearing, not expecting to be photographed, gives to them the very life and beauty that can not be found in other poses where the subjects *know* that they are under the scrutiny of a camera.

I HAVE on hand several drawers full of good manuscripts, some of which I shall keep over till next winter, when they will be in season, and others will be held to await such time as we can find room for them. Still others may never be used. Keeping in mind the greatest good to the greatest number, I shall endeavor to use all of the best thoughts and experiences that are sent in.

REPORTS still show that bees are wintering well generally over the country. Only two letters speak of bad wintering—one for a district in Pennsylvania, and the other for a large portion of South Carolina. With these two exceptions, during the 15 years that I have had to do with this journal I do not remember a time when the prospects for good wintering were any better if as good.

OUR HOMES,

BY A. I. ROOT.

For God so loved the world that he gave his only begotten Son, that whosoever believeth in him should not perish, but have everlasting life.—JOHN 3:16.

In our last Home Paper I said I felt sure that God did not call me into the business of growing flowers for sale. I meant that I felt sure he does not desire me to use the remaining part of my life in that way; and I am impressed that he is not calling me into any sort of business such as I have been engaged in all my life. The greenhouse is all right for recreation, but it is to be my play and not my serious work. Well, if I feel his voice directing me plainly what I shall *not* do, what is it he wishes I *should* do? My health is unusually good. I have lots of energy and zeal, and I have unusual strength of body. When I get on to my wheel now during these spring days it seems to me as if I could ride 100 miles in a day on a good road, without much trouble.

How shall I use my energy of both brain and muscle? Well, friends, this very thing has been my prayer of late. What would God have me do? or, if you choose, what would Jesus have me do, as our friend Sheldon has expressed it? And, by the way, may God be praised that Bro. Sheldon has been enabled to express his grand thoughts to almost the whole wide world. Well, the thing that impresses me just now more than any thing else is that I should use all the influence I possess, at home and abroad, in protesting against the starvation that is going on in India. Sheldon tells us in his daily that 50 millions of people are affected by the famine, and that something like 5 millions are on the verge of starvation even now. These figures are so appalling that Young America (and Old America also) becomes discouraged and overwhelmed, and inclined to say we can not do *any* thing, and that it is not our fault, any way. Oh! but it *is* our fault. It is a burning shame on the present age that *anybody* should be starving for *food* in this *whole wide world*. *We* are responsible, every one of us. We have enough and to spare; in fact, for the last year it has seemed as if people were studying up ways and means to waste money and throw it away. See what I have said in another column about sending money to the different kinds of "healers." See again my allusions to the strong-drink traffic. We all know, without being reminded, that more money is paid out in our land for intoxicating drinks than for bread. This was true when the reckless waste of money in this direction had not assumed its present alarming state. I think I am safe now in saying that harmful drinks cost more than necessary food. Our missionaries are honest, trustworthy people. No one, I think, questions this for a moment. They are devoted followers of Christ Jesus, and will handle safely and wisely every copper entrusted to their care. They have no desire to get rich; in fact, they know nothing of riches. Nobody ever heard of a rich missionary. Their lives and all they have are given freely to helping humanity. Their statements are true. Their appeals to us are right. With the present advanced state of civilization, with the wonderful gifts a good and wise God has, within a few months, placed within our hands, there is certainly no need of starving anywhere on the face of the earth. If there are not railways enough to carry provisions to the people, let us make them. If there are people in any part of the world too ignorant to make storage-reservoirs to save the water, let us show them how to do it. Let the different governments set them to work on these reservoirs, and pay them wages enough to keep them from starvation. Let the millions that are devoted to war (and may I whisper right here the army "*canteen*") be used in public works, first to keep the people employed right off, and, secondly, to furnish them water, and teach them irrigation so they can grow crops in spite of long months without rain. I should like to go to India myself. I should like to take some of the able men of our own land, and have them start these things going. If I could save more people from starving by leaving every thing, and going to India just now, I would do it gladly and willingly. I wonder if there is a millionaire who reads GLEANINGS. If so, can not my poor humble voice induce him to feel some enthusiasm in this work of relieving the starving?

Dear brother, I am not thinking about the *men*. *They* can struggle and die, if need be; but I am thinking of the women and helpless children. They are out of water as well as of food. They have been obliged to desert their homes in the vain quest of both. Women and children lie dead and dying along the way. Mothers give birth to children, under bridges and along the wayside, without shelter; and these things are so frequent that nobody pays any attention. Parents, crazed by the tortures of famine, *murder* their children; and, worse still, sell their little girls to anybody who wants them, for any purpose whatever, for a mere pittance. Let me give you just one illustration—one incident among thousands.

A mother decided her little girl had better die at once by drowning than to suffer the torture of prolonged starvation. She took the child down to the edge of a pool, and tried to drown her; but the girl guessed what the mother was trying to do, and begged so piteously to be permitted to live, promising her mother she would never trouble her any more, and never ask her (her own *mother*) for a crust of bread, that she finally let the child go. The girl made her way to a missionary camp and told her story. But what can the missionaries do, not with hundreds, not with thousands, but with *millions* who are in a like predicament?

Perhaps you think I am getting a good way off from my text; but I assure you I have it in mind. One day while reading my mail, and getting a glimpse of the way the Whisky League with its small number (comparatively) have overwhelmed and sunk in ruin and degradation thousands in spite of the *majority* of temperance people and Christians in the State of Ohio, while reading some of these things I came on to a letter telling of the starvation in India; and I mentioned the case of the little girl whose mother was trying to drown her. A mother, and a very good friend of mine, heard me tell about the little girl, and she said she did not blame the poor starving mother so very much, and added something to the effect that children were better off out of the world than in "such a world as this." Dear friends, Satan is opening up a new scheme of his right along in this very line. Even here in America, where, I might almost say, no one ever lacks food, mothers have been *murdering* their children, giving, as an excuse, they wanted to save them from the misery that may be before them. Well, this friend of mine, woman though she is, rather reflected on the wisdom of God in making such a world, or, if you choose, in permitting people to come into it, only to starve to death by the millions. I have just got another letter from that sister of mine whom I quoted in our previous issue about the flowers. Permit me to copy a single sentence: "There is one thing that puzzles me much. Why does God allow so much suffering through famine in India?" Many good people, perhaps Christian people, have thought of this very thing. It has stumbled me, I am free to admit, not a little. Now may God give me grace and wisdom when I attempt to answer such a question. Dear Christians, fathers and mothers, let us beware how we lose faith so as to criticise the great God above. If we should let go of his strong arm, and lose faith in the Bible promises, we might almost as well all commit suicide. God forbid. Why, the thought is just awful. Since the world began, there never was a time when the great Father above was showering such wonderful, such munificent, such bountiful gifts on his children as just now. *He*, in his infinite love, has given the United States enough to keep the whole 50 millions in India from starving. Our millionaires have the money; and from some illustrations we have had, some of them would hardly know it is gone; but notwithstanding all their wealth and wisdom of a certain kind, they are yet to discover that *real happiness* and true enjoyment can not be *purchased*. If their money was spent in wisely benefiting their fellows they might find some pleasure in life. We are told that Carnegie has said, "It is a disgrace to die rich." I hope he will remember it, and I believe I will write him a letter reminding him of his saying, and asking him to remember starving India.

Well, now, for the text. *Does* God love the world? Why, most assuredly he does, and with such a love that he gave his only begotten Son. Dear father and mother, when you love any person or any people so much that you would give your only child to suffer and bleed and die for their sins, your love could not longer be questioned. God knows humanity better than any one living. He knows of the suffering, and it is on *account* of suffering humanity that he gave this only Son. He gave him, not only that we might have food to keep us from perishing, but that we might have *everlasting life*. Oh! this is true, every word of it. It is the greatest truth the whole wide world contains; and the relief from the famine, the relief from the ravages of strong drink, the relief from greedy millionaires, must come through Christ Jesus. There is no *other* help. Breaking up the saloons by law is a good thing; but such an act can not for an instant compare with converting the sinner to Christ Jesus. A man in our employ got into intemperate habits—or, rather, he revived old intemperate habits. At a meeting of the board we decided we should have to give him up and get rid of him. But no one else could be easily found to fill his place. One of the boys suggested making a determined effort to win the man to Christ Jesus. He was profane as well as intemperate, and the idea seemed almost ridiculous. Well, this young member of this firm plunged right into the work of making the man a Christian. He got the ministers enlisted in the case, hunted up all the facts, went at it as a detective would go to work to win a thousand dollars reward offered. It was *not* a thousand dollars that the young member of the firm was working for, however. It was to save a soul. Dear friends, that man to-day is one of the most promising and useful men in our establishment. He is not only free from strong drink, but tobacco also. A foul word now never passes his lips. He is reading his Bible, going to church, and praying every day that God may help him to be clean and pure. Which course is best worth our while? Which course will be worth most to the world—trying in vain to keep strong drink out of the man's way, or converting him, *body and soul*, to be a follower *henceforth* and *evermore* of that only Son whom God gave to the world to save the world from just such troubles as these? I need not argue the case; you all know I am right. The worst skeptic who reads GLEANINGS, in fact the very ones who have written me ugly letters because I so continually point to the Lamb of God that taketh away the sin of the world, you all know I am right. Christ Jesus will stop the famine in India. The spirit of Christ Jesus in the hearts of men will stop the war in Africa, and will divert the millions that it has cost, and *is* costing, to the poor mothers, the little children, and the little girls. Now, how much will *you* do for Christ Jesus? You say you believe I am right. You acknowledge it in your inmost soul, even if you do not say it. Will you not show your faith by your works? Send something to India right off this minute. There are collections being taken up in your various churches. You can send the money to me if you wish; but that would be a roundabout way. We want it to get there as soon as possible. Here is something I have clipped from Sheldon's daily:

> Five cents will save a life for a day.
>
> One dollar will feed twenty men, women, and children for a day.
>
> Five dollars will save a person's life until the rain comes in July, and the famine pressure is relieved.
>
> Twenty-five dollars will furnish cheap garments for fifty women, or seventy-five blankets needed for protection against the cold.

Five dollars will rescue from starvation, and support fifty children for a month.

One hundred dollars will dig a well that will insure bountiful crops on several acres of land, and secure many families against future famines; or the same amount will equip a cheap grain-shop that would lower the market rate in a circle of many villages.

All contributions should be sent directly to Frank H. Wiggin, treasurer of the American Board, 14 Beacon Street, Boston, and should be marked for the Congregationalist's Relief Fund.

One thing more before I close. It grieves my heart to see the waste that is going on in our United States. In a recent daily a reporter interviewed the head waiter in a large restaurant. They served meals both on the European and American plan. He told the reporter they made more profit, although they received less money, from guests who ordered and paid for what they wanted and nothing more. He said those who paid for a full meal would almost always order every thing on the bill of fare, eat what they wanted, and all the rest of the nice expensive food was dumped into the slop-pail. And this goes on the world over. We are told a good meal can not be furnished for less than 50 or 75 cents or a dollar, because it is customary to throw away more than a customer eats. Not only is the food expensive, but high-priced cooks must be employed to get up expensive dishes just to throw the greater part of them away. I need not speak of the amount wasted, or worse than wasted, on drinks.

Last summer there were more people attending pleasure-resorts than ever before since the world began. I suppose one reason is they were all earning money; and then they made a study as to how best they might throw their money away. All these people have good and abundant meals at home; but in between meals they must have popcorn, ice-cream, lemonade, and may be beer. At the close of the day, after three good meals, banquets are the fashion at 75 cents or a dollar a plate; and in large cities they have $5.00 a plate, $10.00 a plate, and somebody who knows can tell me how much more Think of all of this, and then think of the little girl who begged her *mother* to spare her life, promising she would never again, even if she was starving, ask that *mother* for a crumb of bread. No doubt this child was a pretty winning little girl, like yours or mine. Christ Jesus, and he alone, teaches us that we should stir ourselves for that little girl in starving India as we would were it a child of our own. "Thou shalt love thy neighbor as thyself;" and few would, at the present day, dare to tell us the starving people of India are *not* "our neighbors."

Why does God allow this? I think we may say truthfully we are a part of him. Why does he allow it? Why does the United States of America allow such a state of affairs? God has given us this great abundance in *order* that *we* might feed the world. Instead of feeding the world we are wasting it and throwing it away, making ourselves unwell by the great abundance we do not need. God expects us to compass the whole earth and hunt up the starving. We have been for years trying to get to the North Pole, and are at it yet. Let us use a little of that zeal in hunting up the *starving* people and setting them at work. I do not believe in making paupers of men. God gives the means and commissions *us* to do the work he wants done. When soldiers and money were called for to go to Cuba, there was no lack. To those who are so patriotic, let me suggest it *may be* God's will that America shall *lead* the world in wealth and arts and progress in every direction. Now, before we are fit to lead the world let us first feed the world, or rather the starving people of the world.

If patriotic America is to *lead* the world, is it not a grand matter to start the work on a good foundation by letting patriotic America commence to *feed* the world? I need not tell you who it was that said, "Whosoever will be great among you, let him be your minister; and whosoever will be chief among you, let him be your servant."

SOME EXCELLENT SUGGESTIONS FROM OUR OLD FRIEND PROF. COOK ON CO-OPERATION.

Dear Mr. Root:—I have always admired your earnestness to benefit others, even though you received no personal consideration. It is certainly a thing to be coveted. I therefore am free to come to you now with an article which I think is very important and opportune at this time. We all know the magnitude of trusts at the present time; we all know the evil connected with them; we all know the unrest in the public mind because of these great combinations. Any such general disturbance is greatly to be regretted. On the other hand, close study makes it very certain that such combinations have much to recommend them. The economy which they permit is certainly greatly in their favor. The economy of production, the economy in advertising, economy in sale—indeed, economy everywhere—urges in favor of great combinations. Again, these great combinations make it possible to develop any art to its fullest extent. I think few will dispute the fact that some of our greatest improvements of late have come from combinations. An institution that has so much to recommend it when once thoroughly organized is very hard to remove. I doubt if we can ever do away with trusts. I do believe that, with better Christianity and better methods, the evils will disappear. We may be glad of the best combination if the evils are to be eliminated. Your great business gives you marked advantage over those who have a less trade, and manufacture less. This advantage would be even greater if *all* the bee supplies were produced and sold by you. I believe that, were this the case, you would not take advantage of your position to fleece the bee-keeping public. Not as much could be said of many people. I believe the best way to overcome these evils is to make combination general. I believe the solution will come in general co-operation. The leader of one of our labor unions recently said, "We make no fight against combinations if we can only be fully organized ourselves." I believe there is a wealth of philosophy in his remark. You and I know that our manual-labor pursuits have been seriously handicapped in all the past. The fact that manual-labor occupations have used less brains and culture is the great reason for this struggle in the economy of the world's work. The immediate cause of the handicap is the lack of co-operation. The farmers, including the bee-keepers, have suffered most. Their isolation makes combination much more difficult than in any other class of the world's workers. You and I also believe that there is more of integrity and wealth among our ranchers, as a whole, than among other classes. After any general election we are all eager to learn whether the country people turned out to vote. The very fact of labor and intimacy with God-made things, I believe, accounts for this moral superiority. I like Tennyson's beautiful stanza:

Flower in the crannied wall,
I pluck thee out of the cranny;
I hold you here in my hand, little flower;
And if I could but understand what you are,
Root and all, all in all,
I should know what God and man are.

The farmer mingles with these choice products right from God's own hand, and therefore is refined and made more Godlike. Is it not, then, most desirable that we use every effort to bring farmers together to create unity of action that they make use of the most potent lever that has helped to raise all other classes to the position of superior influence? I am so sure of this that I wish to lose no opportunity to urge all who have influence to work for this end. And thus I wish now to beseech you to spare no opportunity in your able and widely read journal to push the importance of this matter before the people.

You probably know that California has marched to the front in this matter of co-operation among the producers. We believe that the Citrus Fruit Exchange, which controls hardly more than one-third of the products of the State, has been the saving of the citrus industry. We further believe that, when it becomes the controlling power, as it bids fair to be soon, it will be much more of a power for good. The Raisin Combine, of Central California, has saved the raisin industry; has made a business that was flat on its back one of the most desirable in the State; has cleared mortgages from many a vineyard, and has made a despondent people rejoice in thrift and the glad prospect of still better things. The deciduous-fruit exchange, though yet young, is rapidly bringing about a like state of things. We are now having a great combine formed including dried-fruit products of the entire State. The aim is to secure control of 75 per cent of the fruit of the State. It now looks as though the enterprise would succeed. If so, the prune industry, which is now languishing and almost breathless, will be brought again into the prosperity that it deserves. The Bee-keepers' Exchange has been unfortunate in that, since its origin, we have had almost no honey crop. With some good honey years we may hope much from this organization, especially if it is rightly managed. The reason why California comes to the front in this great undertaking is that she has an exceptionally cultured farming class. Many of our ranchers were large, successful business men of the East who came here to our beautiful sunny southland to regain lost health. That the gain might be more rapid they became the owners of orchards; and with recovered health came the love for their work. I do not believe the world can show so bright a community of farmers of so much business tact and energy as are to be found in our beautiful southland of California. Thus it was easier here to inaugurate the combination movement. Men had experienced its benefits in other lines of business, and were eager to repeat the experience in their orchard management. It has occurred to me that the bee-keepers were exceptionally well informed. Do they not almost all take the journals? If they read generally, as I believe is true, then they think and know what forces are moving the world. Are they not, then, men who can be easily induced to come into this combination movement? If I can read the signs of the times, public ownership of all our public utilities is soon to become a fact. I expect to see the railroads, street-railways, express business, telegraphs, and telephones all under municipal or government control. I hope, likewise, to see the agriculture of our country thoroughly co-operative. I feel sure that, with it, will dawn a brighter day, not only for our farming class but for our whole people; for with the prosperity of the farmer comes the prosperity of every other class.

Now, friend Root, will you not give this matter earnest heed, and urge all our bee-keepers to take hold of co-operation with a will?

You know, of course, what co-operation has done for the laboring classes of England. We certainly should not be behind our brothers of the island empire. In my judgment, only a few things are necessary to bring about this desired consummation. One is general enlightenment of the people. We need much of social mingling and culture which will banish the disposition to distrust now too common among our farming class. Secondly, a few examples like those referred to already, which shall show clearly that success comes with good management and will do much to hasten the good time. Certainly we need to take great pains that the business management in this co-operation movement shall be especially wise, intelligent, and honest. To get such management we must pay for it. We must persuade the people of this necessity, which may, perhaps, be one of the most difficult things of all. The railroads secure the very best business ability to manage their business. They pay well for this ability. We can do the same thing, and will as soon as we have fully informed ourselves as to what is for our best interest.

I hope, my dear friend, that you will give this matter earnest consideration, and then I am sure you will feel as enthusiastic in the matter as I do. You will see the good that is sure to come from it, and you will urge in season and out of season that all our people wake up in this matter, and that all our industrial classes shall unite in the fullest and wisest co-operation. A. J. COOK.

Claremont, Cal., Mar. 2.

Dear friend Cook, I heartily thank you for your very kind words in regard to my poor self; and I am glad to say to the friends that I have long felt just about what you outline in a way much better than I could put it myself. I am in position to know the power of many minds working in harmony, backed by the wealth of many persons. May God help us to make this new method of doing things a blessing to all humanity—as well to the poorest and humblest as to the wealthy. Like every thing else that is good, it must come through Christ Jesus, the great Master and the great Leader. May God help us to see that not only is true Christianity, but all *real* success and progress as well, dependent on harmony between labor and capital. One of our great troubles is laborers who are not *loyal* to the firm or organization that pays them their wages every Saturday night, and a *like* great trouble is that the employer or organization is not in a *like manner* loyal to those who do the work with brain and muscle. Once more, may God help us.

TEMPERANCE AND TEMPERANCE LEGISLATION IN OHIO.

Doubtless many of our readers know more or less about the Clark bill that recently passed the House of our State, but failed by just one vote of passing the Senate. When the Anti-saloon League was first started we had the Haskell bill; later we tried what was called the Harris bill, making some progress each time; but the enemy managed, by means that the Anti-saloon League could not use, to defeat us every time. All three of these had one main object — to permit the voters of any town, or precinct of a large city, to decide by vote whether they want saloons in their town or neighborhood or not. After the Clark bill passed the House, the brewers and the Ohio Whisky League became almost frantic in their determination that the bill should not be passed. The *Wine and Spirit News* came out boldly in an appeal to the brewers and saloon-keepers something like this: "Gentlemen, if this bill is passed it will sweep out fully half of the saloons in Ohio." And then it urged and implored them to rally to the fight, and defeat a bill so damaging to their interests, by any sort of means, fair or foul. If you think I am putting it too strongly, see copies of the *Wine and Spirit News*. In fact, you can see enough of it in almost any *one* copy.

Let us now consider this thing a little. In our land of liberty we expect the majority to rule. The Liquor League says, however, that *the majority must not be permitted to rule;* for if it did, half the saloons in the State would be wiped out, and the damage to their industry would be tremendous. "No, sir, 'e.

No matter whether the people in a neighborhood, town, or county want saloons or not, they *must* have them. We claim the privilege of pushing our stuff right under the noses of the most respectable people. Even if there are, in some of our cities, localities where intelligent Christian people are gathered together with their schools and churches and Endeavor societies; no matter how much these people detest and hate the sight of a saloon, they have *got* to have it right in their midst. We claim the privilege of planting it there; and any attempt to give them a law that can drive us out must be thwarted and *killed*, no matter what the cost."

The Anti-saloon League and the good people of Ohio knew what was going on. We got our ministers, our teachers, our godly temperance (and temperate) lawyers to write letters, visit the senators personally, and bring every influence to bear that an honest and upright man *could* bring to bear, and we even succeeded in getting public and private promises from more than enough of the senators to support the Clark bill to make it a *sure* thing. At just the last minute, the bill was pushed through without giving any time for debate, and to our surprise and consternation three of the senators voted against it who had given the temperance people the promise I have mentioned. They succeeded by having just one vote more. These three men were obliged to admit their constituents back of them wanted temperance legislation; and none of them can give any consistent reason why they did not vote as they had pledged themselves to do.

By the way, is it wise, is it just as it ought to be, to permit one man (and that one not a good man) to have it in his power by a single word to curse our whole State of Ohio with saloons in places where the resident people do not want them, and would not have them if there were any legal remedy? Our daily papers came out strongly and valiantly for temperance.* They presented the matter plainly and clearly again and again, and pointed out the unfair and absurd idea of permitting this business to be carried on where it is not wanted, just because the liquor-dealers could make "big money" by so doing. By the way, the *Wine and Spirit News* itself is the best evidence we have in the world of the hellish nature of the traffic they are engaged in. I wish temperance and Christian men and women throughout the land would make an effort to get hold of its pages and read them. It is sent out as a private journal, in the interests of the liquor-dealers. In this periodical they admit that money is what makes our laws, and with brazen assurance they call on the saloon-keepers and brewers to bring forward money—*more* money—or the industry will be killed by good people who do not want saloons in their neighborhood. They admit we outnumber them by honest votes; but they recognize we can not be Christians and use money for bribes, and resort to like criminal ways of working to protect ourselves and enact righteous laws. What is going on here in Ohio is still going on in almost every State in the Union; and, sadder still, it is held up by the precept and example of even the very head of the United States government. Now, I am not advising that we should give up, and let things go as they are. See Home Paper in this issue.

THE NATIONAL ANTI-SALOON LEAGUE.

I am sorry to say there are people, even Christian people and temperance people, who, for some reason I can not comprehend, are picking at the Anti-saloon League. Now, the very best testimony that the world can produce of what the Anti-saloon League is doing in the United States is found in the organs of the various whisky papers. The whisky men of Michigan have a periodical they name *Truth* (I have just been wondering if it is some relation to Francis Truth). Let me give you one extract from this *Truth* paper:

> The Anti-saloon League's campaign for local option in several of the counties of the State, which the League considers hopeful, is now in earnest.
>
> The liberal people of Michigan, liquor-dealers in particular, have no idea of the magnitude of this Anti-saloon League movement in Michigan. It has spread out over the State until nearly every city and town of any size has a local League affiliated with the State League, all pouring money into the pockets of State Superintendent John Brant and his agents.
>
> These men, and there is a host of them, are traveling about the State constantly, creating discord, and they are slowly but surely winning their way to success, aided by the very liquor-dealers they seek to ruin.
>
> As sure as the sun rises, Michigan liquor-dealers are going to see stormy times for the next two years, culminating in serious restrictive legislation and local option in half the counties of the State, if something isn't done by the liquor-interests to bring the trade up to a higher standard, where it can command more of public approval.
>
> Do not imagine, because your county is not threatened at present that you have no interest in the battle in the counties where it is raging. Should the Anti-saloon League succeed in carrying one county for local option next spring, the influence would be felt in every county in the State. Religious frenzy would be aroused, fanatics encouraged, money would be poured into the coffers of this un-American league, and there would be an epidemic of local-option elections. The influence of such a victory would be felt at Lansing next winter, and the whole liquor trade of the State would be in danger.

I do not suppose anybody will undertake to say the whisky periodicals have exaggerated or overestimated the damage we are doing. I am pleased to tell you that Bro. Brant was one of the few present at our first meeting, and helped organize the Anti-saloon League of Ohio. This extract is only a sample of what may be found in the liquor periodicals all over the United States. Bro. Brant, let us congratulate you on the grand work you are doing. Be ye not weary, etc.

Humbugs and Swindles.

THE NATURAL-HEN INCUBATOR.

Mr. J. F. Seims, of Columbus, Neb., is getting a great lot of money (or at least he *says* he is, in his circulars) by selling a pamphlet

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*I clip the following from a recent issue of the *New York Tribune:*

They will oppose any reform whatever.

They deny the right of the people to protect themselves at all.

They claim the right for themselves to poison and brutalize and degrade all whom they can reach.

of four pages (two leaves, mind you), for $1.00. This pamphlet tells how to make the "natural-hen incubator," and contains just one engraving. I sent him a dollar; and if it were worth while I could give the whole contents of his pamphlet right here. The plan is to have 16 hens' nests for sitting hens. Each nest has a little yard 4 feet by 1, and the hen is to be confined to the nest and the little yard. At the further end of the yard are two tin cans. One contains corn and the other water. She goes out and gets food and drink, and then goes back to her nest. Now, this thing might work with some people; but I tried it years ago, and I decided the hen must have a bigger range for air and exercise. But suppose the thing *does* work according to his testimonials. In that case the inventor should furnish a fair-sized poultry-book for the dollar he gets (describing in *full detail* his invention), instead of a *single sheet of paper* that could be easily furnished for a quarter of a cent. I do not know what the Postoffice Department will have to say about taking a dollar for the printed matter on a single sheet; but I am going to submit the matter to them. Mr. S. tries to make out that he has some sort of "patent right" on this piece of paper, and that he can forbid anybody from showing it to his neighbors and letting them make a "natural-hen incubator" unless they also pay $1.00. What *does* ail people to make them part with their dollars so readily nowadays?

FRANCIS TRUTH, THE DIVINE HEALER.

For some time back, inquiries have come in in regard to Francis Truth. He is the chap who gives a picture of himself, with a benevolent priestly look on his face. He also quotes Scripture, even in his advertisements. He claims to perform modern miracles; and as an explanation of it he quotes words spoken of the Savior and applies them to himself, like the following: "How knoweth this man letters, having never learned?" Furthermore he says in great headlines, "There are now no incurable diseases," and adds, "Tell what your trouble is in a letter plainly written, and he will heal you free of charge." Of course I sent at once, and told him I wanted to be cured so I could eat all sorts of things as other people do. A printed circular (purporting to be a letter) informed me I would have to go to Boston and visit the office, to be cured free of charge. He said he could cure me at a distance without any mistake, but it was more trouble, and I would have to send him $5.00 every month. A sort of magazine came from his establishment, giving pictures of his palatial residence, magnificent offices, as well as striking testimonials from people who had been cured. I thought once I could catch him by reporting him to the P. O. Department at Washington; but his magazine was in an envelope, and he pays book postage on it every month—that is, if it is really issued every month. I was perfectly satisfied the whole thing was another fraud, just about like the Weltmer fraud at Nevada, Mo. I did not believe his name was Francis Truth, and I did not believe there was any *truth* about him or in any of the people whose pictures he shows in that magazine; and while deliberating as to what could be done with such chaps you may be sure I read the following, in a Cleveland daily, with interest:

> ### FRANCIS "TRUTH," THE DIVINE HEALER.
>
> BOSTON, MARCH 15.—E. B. Bemis, alias Francis Truth, famous as the "Divine Healer," was arrested here to-day by the local and Federal authorities together, charged with using the mails to defraud. The authorities claim that this is one of the most colossal frauds of the century, surpassing Miller's "Franklin Syndicate" and Parker's "three-star-ring good-luck box." In police headquarters is a small mountain of letters containing money which patrons have sent to him from all over the country.
>
> The police declare to-night that Bemis has been making a net profit of $35,000 a week for months. The Boston postoffice employed a special wagon to deliver the cartload of letters containing money to "Truth's" office several times a day.
>
> The "healer" has been publishing two and three column advertisements in all the leading newspapers in New England for months, reciting his alleged miraculous cures. He charged a fee of $5.00 for treatments which consisted solely of the "laying on of hands." The authorities claim that the testimonials of cures are written by his wife under various aliases, and this will be one of the principal pieces of evidence
>
> ### IN THE PROSECUTION.
>
> In the "Francis Truth Institute of Divine Healing," where Bemis was arrested, were twenty-eight typewriters, all busy answering the letters and correspondence, and conducting the "absent treatment" business at $5.00 per treatment. An inspector disguised, hobbled into the "institute" on a pair of crutches, paid his $5 and was "healed," and then the "healer" was arrested. Six thousand dollars was found in his mail for to-day alone.
>
> Bemis also published a monthly magazine and several books. He charged a fee of $5 for joining the "institute."
>
> A few weeks ago the police succeeded in securing the services of a man employed at the "institute," and were thus able to follow Bemis' doings daily. To-day the final evidence was secured. The chief of the Boston Bureau of Criminal Investigation, with one of its inspectors, a United States deputy marshal, and six postoffice inspectors, went to the establishment at 5 o'clock this afternoon and captured their man. The rooms were sumptuously furnished with rich mahogany chairs and sideboards, and expensive paintings lined the walls. One room was full of
>
> ### DISCARDED CRUTCHES.
>
> Cartloads of mail matter, among which were letters containing $5 bills, were seized. There were tons of printed matter and stereotyped letters in answer to applications for treatment, and scores of so-called testimonials. His letter of instruction to those taking his absent treatment directs the patient to "go into a closed and locked room alone, sit quietly in a rocking-chair, with folded hands and closed eyes, and listen to the music of the divine power of healing surging through their souls."
>
> The twenty-eight girls who worked for Bemis in the "institute" declare that they knew all along that the scheme was "a gigantic swindle," and they say that some of the letters they were obliged to write were "the worst frauds ever perpetrated," but they were very well paid, so that they said nothing until the climax came.
>
> Bemis is about forty years old, and a remarkably fine-looking man. He is held in jail without bail. Among his alleged testimonials are many from Ohio.

Now, in view of some of the experience I have had in the past few months, I expect some will write me that Truth (?) is an honest man, and persecuted for righteousness' sake. Others will say that he heals diseases, anyhow, and that he will soon get out of jail and go on with his business. Why, it fairly makes one blush for his fellow-man. The saddest part of it is, a great part of his victims come from our own State of Ohio. Almost every mail brings inquiries from some of our readers as to whether they had better send $5.00 bills to this, that, or the other "divine healer." No man but Christ Jesus himself ever healed *anybody* by the "absent" method. The whole thing is witchcraft of olden time revived; and the only possible explanation I can think of, as to why people should send money in sums going away up into the thousands to such impostors and charlatans is that Satan has broken loose in a new direction within the past few months. I do not know but people are getting money so easily in these days of plenty of employment and good wages that they do not know the value of it. But is it the *poor* people's money that supports in royal style these highway robbers — men who make it a great business to *rob* the *sick?* The 28 girls with typewriters did *all* the curing there was done. Bemis just sat in his mahogany chair and bossed things, he and his wife inventing a *new* batch of lies to send out every morning.

THE PEACH-TREE BORER.

This is the title of Bulletin No. 176, from Cornell University, Ithaca, N. Y.; and I would earnestly advise everybody to procure it who has been troubled with borers in fruit-trees. As the matter has been frequently discussed in our pages, I clip the final summing-up of the whole bulletin as follows:

> In our four years of warfare against the peach-tree borer we have been thoroughly convinced that it is a difficult insect enemy to control. No method of fighting it has yet been devised by which the peach-grower can hope to get a single year's respite; the trees must be treated anew each year, and thus the warfare is a perpetual one.
>
> The following substances injured or killed our trees, and are therefore classed as *dangerous:*
>
> Paris green and glue, raupenleim, dentrolene, white paint, white paint and Paris green, printer's ink.
>
> The following is a list of the things we found to be practically *ineffectual* or *useless:*
>
> Wire cages, carbon bisulphide, asafœtida and aloes, lime, salt, and sulphur, resin wash, hard soap, tallow, tansy, whale-oil soap, whitewash, lime and linseed oil, hydraulic cement wash, pine tar, Hale's wash (one application).
>
> The following methods proved to be *quite effective;* that is, most of them kept out over one-half of the borers:
>
> Hale's wash (two applications) kept out ⅓ to ½. Mounding kept out ½ to 7/10. Tarred paper kept out ½ to ⅞. Tobacco stems kept out ⅔ to ⅝. We would expect equally good results from the "digging-out" method applied under the conditions stated on page 9. Gas tar gave us the best results of any thing we tried.

We are especially pleased to see gas tar get such a good recommend, especially as one of our correspondents, Mr. B. F. Barr, on page 742, 1898, was so very positive that it would do the work, and would not injure the tree in any way whatever. In their directions for using gas tar, they state as follows:

> We believe it will prove equally effective whether the borers are dug out or not, and from no other application yet devised would we expect to get such results when used independent of the "digging out" method.

THE BERMUDA PAPAYA (OR MELON) TREE.

I have a papaya-tree from your seed, over 3 ft. high. It will stand dry air and heat better than most plants.

Clinton, Ill. HENRY WILSON.

Well, friend W., I am glad to know that one person has succeeded. We had one last fall four feet high with leaves as large as a small parasol; but before I learned the trade of handling greenhouse stuff I worried it to death. I am trying now to get a cutting of it in that cutting-bed, but I fear I shall not succeed.

SOMETHING MORE ABOUT THAT BIG CROP OF CARROTS; SEE PAGE 63.

Mr. Root:—I see you want to know more about the carrots. I do not know the name of the carrots. All that I know, it is the half-long carrot. I plant them between strawberries. There are five rows, and each row 55 ft. long. They were only kept clean of weeds; each row filled 2½ bushels, except the last row, which filled 2 bushels. I figured if I planted the carrots by themselves a foot apart it would make about a square rod.

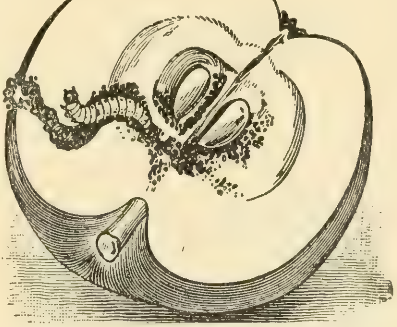
Last summer, a year ago, we had a patch of strawberries 25 by 55 ft. in size, and we got about ten bushels. They were Jessie and Haverland.

Peters, Mich., Feb. 26. FRED A. HUND.

Your explanation, friend H., makes it very plain. The strawberries gave space between the carrots for sun and air; and, if I am correct, your crop of strawberries was a good deal smaller because of the tremendous crop of carrots between the rows. Of course, your statement was all right; but I think I might perhaps do the same thing on our ground in the way you have explained how you did it.

SPRAYING FRUIT-TREES.

The question of spraying fruit-trees to prevent the depredations of insect pests and fungus diseases is no longer an experiment but a necessity.



Our readers will do well to write Wm. Stahl, Quincy, Ill., and get his catalog describing twenty-one styles of spraying outfits and full treatise on spraying the different fruit and vegetable crops, which contains much valuable information, and may be had for the asking.

WIDE AWAKE WOMEN everywhere are furnishing their homes without money by distributing a few of our fine soaps, perfumes, extracts and toilet preparations, among their friends and neighbors.

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If you want to get the Best Seeds for your garden this year, you should send your address on a postal card for BURPEE'S FARM ANNUAL FOR 1900. It is a bright, new book, considered by intelligent planters everywhere "The Leading American Seed Catalogue." You had better write to-day. Simply address

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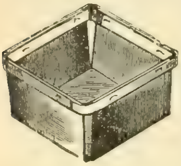

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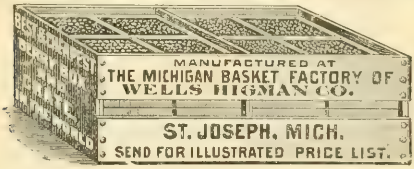
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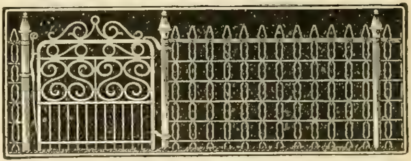

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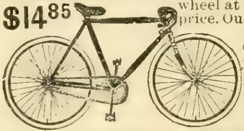

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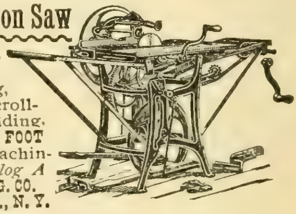

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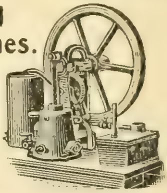

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Select stock of the best of the old and new varieties. Descriptive circular and price list sent free. Refer by permission to The A. I. Root Company. Address

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Special Notices by A. I. Root.

TOP OR ACORN ONION-SETS.

As we are sold out, and I have been obliged to purchase more, at a higher price, the price will be, hereafter, 15 cts. per quart (by mail 25 cts.); peck, $1.00; bushel, $3.50.

THERMOMETERS FOR DIFFERENT PURPOSES.

In addition to those mentioned in our last issue, p. 202 we can furnish a substantial incubator thermometer for 40 cts; postpaid by mail, 50. A reliable dairy thermometer, all metal so it can be immersed in liquids without any rusting, 15 cts.; by mail, 20. Last and least, a miniature thermometer, 3 inches long, which will do very well for keeping the temperature of a cutting-bed, if your eyesight is good, for only 10 cts.; by mail, 13.

DR. DOWIE AND ZION'S TABERNACLE.

Two persons have complained that my severe censures of Dr. Dowie were uncalled for, and that he is innocent. In our last issue, page 231, where I say there is no need of explanations, I should have said there is no need of *more* explanations, meaning that he had explained the charges against him so many times after his fashion that the public did not need any more of that sort. Well, Dowie has again replied and explained, and sent out a most voluminous issue of his *Leaves of Healing* for the purpose. I have really spent more time in carefully examining it from beginning to end than I can afford. Now, even if he does prove conclusively that the men and women who expose him through *Ram's Horn* were bad and wicked like *himself*, does that make *his* case any better? The Bible from which he quotes so largely says, "When a man's ways please the Lord, he maketh even his enemies to be at peace with him." Now, Dowie is not at peace with his enemies by considerable; and his revelation shows that he is *very far* from being at peace with the members of his own household (altogether *too many* of them)—that is, calling Zion his household. As I censured him severely, I have given him a very careful hearing. My verdict is that he has not by any means answered the charges preferred against him

ROOTED CUTTINGS.

Mr. S. T. Danley, of Macomb, Ill., whose address I gave in our last issue, writes me that, although he makes a specialty of shipping to florists, he will fill orders to anybody at his printed prices, no matter how small the order, and all plants will be delivered by mail or express free of charge. His price list will be mailed you on application. Why, it just makes my heart bound to think of getting rooted cuttings of these beautiful plants for only a cent or two apiece. Mr. Danley has a great list of verbenas for only *sixty cents* per 100; colei, 70 cts.; petunias, $1.25; geraniums, $1.50, and so on, and they are safely delivered right at your home at these insignificant prices. I suppose I am giving him a big advertisement; but when I think of the great amount of pleasure and entertainment these little plants will give to the thousands of homes I feel it is no more than right that he should be encouraged. You see there is an advantage in these rooted cuttings over purchasing seeds, not only that you get flowers ever so much quicker, but you have the benefit of having the very best selected and *named* varieties. The golden-leafed salvia that I have said so much about he calls the "yellowbird;" but it is the same thing as Childs' golden-leafed; and the little plants are furnished at only 20 cts. a dozen, or $1.00 per hundred. Why, I would not take a five-dollar bill for my golden-leafed salvia and its little family of cuttings that I have watched and fostered, and found much happiness with during the past winter—that is, if they could not be bought any cheaper than $5 00 a plant. And, by the way, since I have become acquainted with the salvia, I can make it do just what I want it to do, better than almost any other plant in my collection. You must become *acquainted* with each plant, mind you. They do not behave all alike. I tried putting some pansies and violets in my forcing-bed, and handling them as I do the salvias; but they do not like so much heat. They rotted, and sent up white spindling shoots; but after I found out what they wanted, and put them in the coldest part of the greenhouse, where the pansies got a little frost on their leaves during a cold night, they were just suited. There may be some book that tells what plants are hardy and what are exotic, but I have not heard of it. I have been learning by experience. But the "tuishun" is rather too "hi" sometimes.

The most gorgeous thing in all that little greenhouse is a Madame Van der Cruyssen azalia just now. Perhaps the next thing is a single petunia with more than a dozen large blooms on a single little plant Just now, March 27, buds and blossoms are pushing out almost every hour. We have geraniums, almost all the colors of the rainbow, and no end of beautiful foliage plants. In the center bed of the greenhouse I have tried my hand at making an oval-shaped bed of salvias, acharanthes, colei, heliotropes, etc. And, by the way, be sure to get an acharanthus to go with your colei plants for a contrast. I just now noticed that our friend Danley says in his catalog, "We do not care where you live, we guarantee our rooted cuttings to reach you in good shape." That beautiful little plant. *Impatiens Sultana*, is advertised at 30 cts. per doz., or $2 00 per 100, by S. M. Pike, St. Charles, Ill.

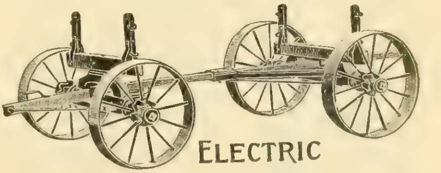
Friend Pike agrees with me in regard to what I said in the last issue about cuttings, as follows:

> "A good strong rooted cutting will, if properly handled, start with more vigor, and make a much more satisfactory plant, than one that has been allowed to become root-bound in a small pot for a considerable length of time. If any of your readers would like to try some of the rooted cuttings I will mail them a list upon request. S. M. PIKE."

Now let me say to the readers of GLEANINGS in regard to ordering cuttings: These men whose names I have given are in the habit of filling orders for hundreds or thousands of plants; and where a small order for plants is received they can not afford to give it much time, and pay expenses. As a rule, I believe they do not even acknowledge the receipt of the money except by sending the cuttings; and sometimes you have to wait your turn, say several days. If you want them to reply as soon as they receive your stamps, inclose a postal card directed to yourself. They can then tell you the money is received, and when the goods will probably be sent, with just a few strokes of a pencil. I do not believe a wholesale florist usually wants to take time to read long letters or answer questions—that is, during the busy season. I judge this from some personal experience. If he consents to furnish you valuable plants for a cent apiece or less, the business must be done without waste of time and without having to refer the small order to the proprietor himself. One great objection to filling small orders at close prices is that it so often takes valuable time from a high-priced man. If you send an order that amounts to a good many dollars, then of course the proprietor might give it personal attention, and can give advice and make suggestions. I have mentioned this because I really hope every thing will be pleasant and satisfactory. I am glad to say that, with my experience in the flower business, I have had better plants, more of them, and *nicer* ones, than I had any reason to expect for the amount of money I sent.

Labor-Saving Conveniences.

Success on the farm to-day is largely proportioned to the saving of time and labor—which means economy of production—and not higher prices for farm products. Probably no single machine or appliance saves in the aggregate so much time and hard labor as the modern low-down handy wagon. Take for instance the loading and hauling of manure, ensilage corn, grain in the straw, corn fodder, hay, etc, all hard to load, the use and advantages of a low-down wagon are almost inestimable. The Electric Low-Down Handy Wagon excels for these purposes. Has the famous Electric steel wheels, is light, strong, and durable. Write Electric Wheel Co., Box 00, Quincy, Ill., for catalog



Olive Oil. This oil is of fine quality, and guaranteed absolutely pure; try it. Extracted by myself. Case of 2 doz. bottles—2 gals—$10.00; case of 1 doz. bottles—2 gals.—$9.50; case of two 1-gal. cans, $8.50. All f. o. b. here. Sample on application, 15c. **A. B. GURR, Merced, Cal.**

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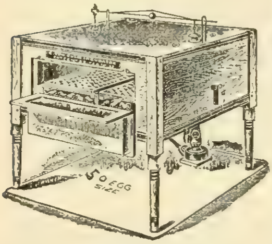

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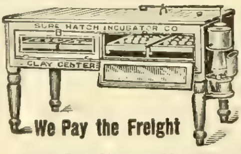

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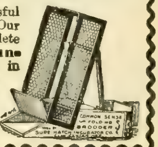

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Warranted to last **Ten Years** without repairs and to **out-hatch** during three trials any other incubator bar none; **THIS OR YOUR MONEY BACK. Built for business—sold on honor.** 16-page illustrated circular and price list **FREE.** Poultry Manual and Catalogue No. 74 (160-pages, 8x11in.) entitled, "How to make money with Poultry and Incubators' sent postpaid for 15 cts. in stamps—**worth dollars.** Address nearest office.

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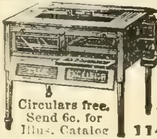

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Barred and White Plymouth Rocks, Light Brahmas, single-comb White, Brown, and Buff Leghorns; rose-comb Brown Leghorns; Silver-laced and White Wyandotts, Partridge Cochins, Single and Rose Comb Black Minorcas, S. S. Hamburgs, and Pekin Ducks. Eggs, $1.00 for 15. Circulars and recommendations free.

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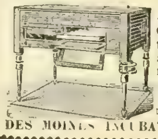

would be an improvement on the old way but WE can't do it. We CAN furnish an **INCUBATOR that will hatch** all hatchable eggs, and do it with less attention than any machine made. It does it because it is made right and has all late improvements. Sold at a low price and guaranteed. **Catalogue in 5 languages, 6 cts.**

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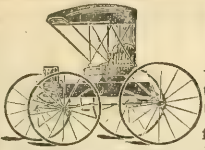

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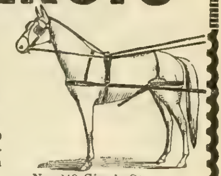

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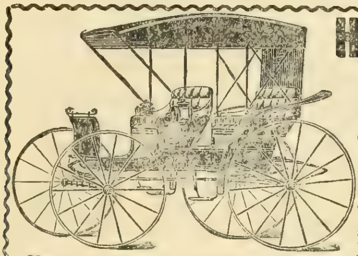

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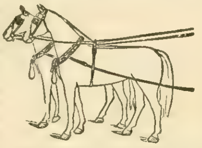

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in 10-frame Langstroth hives, also house with outbuildings and seven acres of land, partly set out in fruit of various kinds, on the edge of a growing town, main line C., B. and Q. Railway. Good market.

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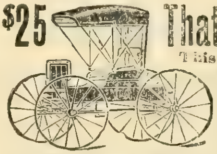

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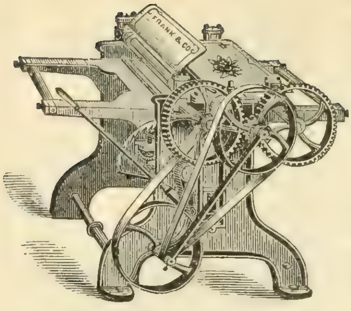

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FRANK L. ATEN, Round Rock, Texas.

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BREEDER OF

Fine Golden Italian Queens.

Merigold, Bolivar Co., Miss.

By this my many and kind friends and customers will see that I have moved from Falmouth, Ind., to Merigold, Miss., where I shall be better prepared to furnish queens than heretofore. I brought 80 colonies of five-banded bees with me, and will make the rearing of queens a specialty.

Untested queens during April and May, $1.00; after May, 75 cts. each.

Kindly thanking my friends for past favors, I trust to receive at least a part of their orders in the future. Remit by express or by postoffice money order.

D. WURTH.

Root's Goods for California.

We have just received a large carload of sections, extractors, smokers, veils, etc., direct from the factory, and are prepared to supply bee-keepers with the same promptly. Do not send a long distance and pay high freights. Write for our prices.

M. R. MADARY, - Fresno, California.

D. COOLEY,

Dealer in **BEE-KEEPERS' SUPPLIES,**

KENDALL, MICH.

Root's Goods at Root's Prices. Catalog free.

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by ordering in wholesale quantities of VICKERY BROS., Evansville, Ind.

They carry an immense stock of sugar, coffee, teas, canned goods, soap, candles, provisions, flour, oil, garden and field seeds, nails, fence-wire, wooden and willow ware, grocers' sundries, bee-hives, sections, foundation, comb, and general bee-keepers' supplies; buy and sell honey and beeswax.

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20-page illustrated price list now ready.

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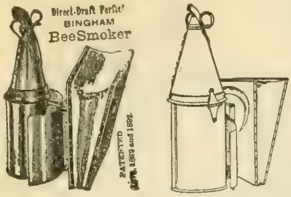

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BINGHAM & HETHERINGTON
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MADE TO ORDER.

Bingham Brass Smokers

Made of sheet brass, which does not rust or burn out; should last a lifetime. You need one, but they cost 25 cts. more than tin of the same size. The little open cut shows our brass hinge put on the three larger sizes. No wonder Bingham's 4-inch smoke-engine goes without puffing, and does not drop inky drops. The perforated steel fire-grate has 381 holes to air the fuel and support the fire.

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Our motto is, "Perfect Goods and Prompt Shipment."

Send for our new free illustrated catalog.

PAGE & LYON MFG. CO., New London, Wisconsin.

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64-page Catalog of Every Thing Bee-keepers Need.

Illustrated and fully described. Especially valuable to beginners for the information it contains Send your address on a postal and get it NOW. Established 1884.

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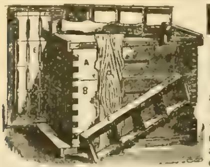

HONEY MONEY results from the best care of the bees. That results from the use of the best Apiary appliances. **THE DOVE-TAILED HIVE** shown here is one of special merit. Equipped with **Super Brood chamber, section holder, scalloped wood separator** and **flat cover.** We make and carry in stock a full line of **bee supplies.** Can supply every want. Illustrated catalogue **FREE**

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OVERHOLT CORN-SALVE. Sure cure. Directions. —Apply at night by spreading thick upon a piece of linen. Repeat next night if necessary. Soak foot in warm water, and corn will fall out. Good also for bunions. Price 15c prepaid. **A. M. Overholt, Medina, O.**

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Golden Wyandottes Exclusively. Cockerels $1 each. Eggs, $1.00 per 13.
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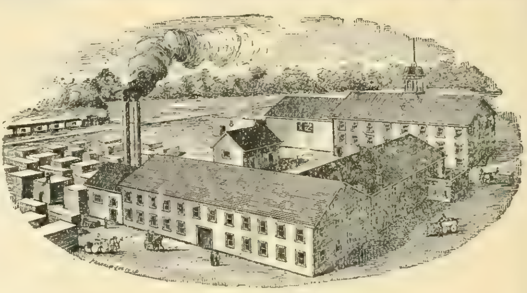
We also manufacture TANKS of either wood or galvanized steel, all sizes, any form, and for all purposes. Price list free.



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BEES! ✻ BEES!

Full colonies or nuclei. We ship from New York City, which means but one express rate.

NEW YORK CITY is the best shipping-point in the East, you can save freight by buying here, and get superior goods.

COMB FOUNDATION. We use all yellow wax, and will send you samples on request. They will please you —so will the prices. Catalog free.

I. J. Stringham, {Apiaries at Glen Cove, L. I.} **105 Park Place, N. Y.**

$10.00 REWARD

To the party who sends me the most money for bees and queens between April 1 and Nov. 1, 1900. My 1900 untested queens ready to go

BY RETURN MAIL.

High-grade stock and not cut prices, my specialty.

1 untested queen, $1.00; 6 for $5.00; 12 for $9.00.
1 tested queen, $1.50; 6 for $8.00; 12 for $15.00.
Breeders, very best, $3.00 to $5.00.

Nuclei ready April 15. I have special express rates on bees.

One 1-frame nucleus, no queen, $1.00; 6 for $5.50; 12 for $10.00.
One 1-frame nucleus and queen, $1.75; 6 for $9.00; 12 for $17.00.
1, 2, 3, and 4 frame nuclei, 65c per frame to above prices for extra frames wanted.

For each dozen queens or nuclei ordered at above rates I will mail in August a **SELECT TESTED QUEEN.**

Just received, a carload of Root's goods, which I am selling at Root's prices plus carload-rate freight.

Bees, Honey, and Beeswax bought and sold.

W. O. VICTOR,
Wharton, Texas.

Don't Buy Supplies

Until you see my 40th annual catalog. A full line of hives and fixtures best adapted to our New England climate. Also best brands of **Comb Foundation and Section-boxes.** I have also made arrangements to keep quite a general stock of

A. I. Root Co.'s Goods at Their Prices.

Parties desiring these goods can get them of me, and **Save Freight Charges.** Bees, Queens, and Nucleus Colonies from the **very best strains** in America. A 40-page illustrated catalog free. Address

W. W. Cary,
Lyonsville, Mass.

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Honey Column.

CITY MARKETS.

KANSAS CITY.—We quote fancy white comb, 15; No. 1, 14; No. 1 amber, 13; No. 2, 12½. Extracted, white, 8; amber, 7; dark, 6. Beeswax, 22@25.

C. C. CLEMONS & Co.,
Apr. 10. Kansas City, Mo.

PHILADELPHIA.—There is no comb honey in our market. Fancy extracted honey is selling at 8, and amber from 6½@7½. Beeswax, 28. We are producers of honey—do not handle on commission.

WM. A. SELSER,
Apr. 9. 10 Vine St., Philadelphia, Pa.

COLUMBUS.—Market bare of white comb. A small quantity of amber is on market, selling at 14.

EVANS & TURNER,
Apr. 9. Fourth and Town Sts., Columbus, O.

CHICAGO.—Very little trade in honey of any kind. This is usual at this time of the year, and stocks are well reduced, so that for fancy white comb of the coming crop a good demand should exist. Best white comb now sells at 15@16. Ambers and dark are difficult to dispose of at 3@7 cts. per pound less. Extracted, white, 7½@8; ambers and dark, 6@7½. Beeswax, firm at 28.

R. A. BURNETT & Co.,
Apr. 9. 163 S. Water St., Chicago, Ill.

NEW YORK.—Comb honey is still in demand in a small way, but none to be had of any account. The market is quiet for extracted, with prices a trifle lower. Quotations will stand a little shading from our last, particularly extracted honey. Comb honey, 8@15; extracted, 5½@8. Beeswax, 27½@28½.

Apr. 9. CHAS. ISRAEL & BRO.

NEW YORK.—Market is practically bare of comb honey of all description. Little lots arrive here and there, and sell readily at from 10 to 11 for buckwheat, and 12 to 15 for white, according to quality and style of package. The market is well supplied with extracted honey, which we think, however, will be moved before the new crop arrives. Beeswax is in good demand at from 27@29.

HILDRETH & SEGELKEN,
Apr. 9. 120, 122 West Broadway, New York.

WANTED.—To buy honey. Should like to hear from parties having extracted honey to offer, and their best price, delivered at Cincinnati. I pay cash on delivery.

C. H. W. WEBER,
Suc. to C. F. Muth & Son, Cincinnati, Ohio.

WANTED.—Comb and extracted honey. State price, kind, and quantity. R. A. BURNETT & Co.,
163 South Water St., Chicago, Ill.

Sharpless Cream Separators—Profitable Dairying.

FACTS About Bees.
REVISED EDITION.
How to get
GILT-EDGED HONEY
Send 2c stamp to
THE A. I. ROOT CO.,
Medina, Ohio,
or F. Danzenbaker,
Box 66, Washington, D. C.

IF YOU NEED QUEENS

We can fill your orders by return mail. To use the words of our customers, with the "largest and finest queens you ever saw." These queens are not only fine looking, but are very prolific, and their bees are the best of honey-gatherers; that means strong colonies and full supers. Now, to prove that this is not all talk, send for our price list of Italian queens, and give us a trial order.

The choicest of tested queens, $1.00 each. Untested, 75 cts. each; $8.00 per doz.

Safe arrival and satisfaction guaranteed on every order.

J. W. K. SHAW & CO.,
Loreauville, - Louisiana.

Florida Queens.

NOW READY FOR DELIVERY. They are **healthy, prolific, industrious, and gentle.**

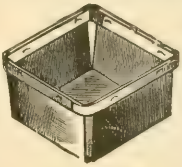
Laying Queens at $1.00, or $10.00 per dozen.
Virgin " 75 cts., 7.00 " "

JNO. L. MARVIN, Jacksonville, Fla.

Queens! Golden beauties, sent by return mail, prolific and good workers. Losses in introducing replaced at half-price. Untested, 65 cts. each; half doz., $3.50; tested, $1.25 each. Satisfaction guaranteed.

G. VANDE VORD, Daytona, Fla.

FRUIT PACKAGES OF ALL KINDS.
—ALSO—



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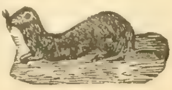
We allow a **Liberal Discount** on early orders. Why not send for your supplies now to save the discount and avoid the rush of the busy season? Catalog and price list free. Address

Berlin Fruitbox Co., Berlin Heights, Erie Co., O.

1200 FERRETS FOR SALE. Small, medium, and large sized; some trained. **First-class** stock. New price list free
N. A. KNAPP,
Rochester, Lorain County, Ohio.



SPECIAL NOTICES BY BUSINESS MANAGER

EASTMAN KODAKS.

We sell them. Write for prices if interested, and say about what size you want.

SECOND-HAND FOUNDATION-MILLS.

We have on hand several 6-inch and one 12-inch mill. Send for samples of the work and prices if you expect to buy a mill.

SECOND-HAND WHEEL FOR SALE.

One Cleveland wheel, ladies, model, price $25.00. Write for particulars if interested. Write also for catalog of 1900 Cleveland wheels if you want to buy a wheel.

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Good stock on hand of fine quality. Syrup, $1.00 per gallon; 10 gallons at 90c; 25 gallons at 85c. No. 1 sugar, 9c per lb.; 50 lbs. at 8½c; 200 lbs. at 8c. Special price on 1000-lb. lots.

We have a little No. 2 sugar at 1c per lb. less than No. 1.

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We sold 1700 last year. Certain death to all insects. Keeps flies off your horses and cattle. Kills potato-bugs, currant and cabbage worms, and lice on stock and poultry. Prices as follows:

Faultless tin sprayer with galvanized iron tank, 60c; by mail 25c extra.

Faultless brass sprayer, 85c; by mail 25c extra.

Large stock on hand. Special prices on quantity lots.

BUSINESS COMPARED WITH ONE AND TWO YEARS AGO THIS DATE.

On comparing the number of carload shipments turned out up to this date with one and two years ago we find a gain this year over last of five cars, and over two years ago a gain of ten cars, not counting export business. Up to this date, two years ago, we had exported 8 cars; last year, 27 cars; this year, 20 cars. While two years ago we were running day and night, and very much behind on orders, this year we are well up with orders on regular time, and have a large surplus stock to draw on. This difference is accounted for by our more complete equipment put in a year ago last fall, which enables us to take care of a larger business much more easily. We have a stock of over three million sections in the various styles and sizes, and both grades. We have a large stock of No. 2 sections in the various widths and styles, whereas a year ago we could not furnish enough No. 2 to supply orders. Less than carload shipments, this compares favorably with last year, but is not up to two years ago. The very late spring has a retarding effect on business, and we hope for an improvement when the weather warms up. Reports of wintering are generally favorable, though this prolonged cold weather may cause spring dwindling.

NEW BOOKLETS.

The Chicago, Milwaukee & St. Paul Railway is issuing a series of booklets regarding points of interest along its lines, and if you are interested in the western country, or contemplating a trip, write GEO. H. HEAFFORD, General Passenger Agent, Chicago, Ill., for the special publication desired, enclosing four cents in stamps for postage for each one.

No. 1. The Pioneer Limited.
No. 2. The Land of Bread and Butter.
No. 3. The Fox Lake Country.
No. 4. Fishing in the Great North Woods.
No. 5. The Lake Superior Country.
No. 6. Cape Nome Gold Diggings.
No. 8. Summer days in the Lake Country.
No. 9. Summer Homes, 1900.
No. 11. The Game of Skat.
No. 12. Milwaukee—The Convention City.
No. 13. A Farm in the Timber Country.
No. 14. Stock Raising in the Sunshine State.
No. 15. Hunting and Fishing.

Wants and Exchange.

Notices will be inserted under this head at one-half our usual rates. You must SAY you want your ad. in this department, or we will not be responsible for any error. You can have the notice as many lines as you please; but all over ten lines will cost you according to our regular rates. We can not be responsible for dissatisfaction arising from these "swaps."

WANTED.—To exchange comb foundation for wax. Write for terms to B. CHASE, Earlville, N. Y.

WANTED.—An honest, intelligent, Christian young man with an agreeable wife, and few or no children, to take charge of my apiary in Colorado. Address MRS. FRANK BINGHAM,
499 Fullerton Ave., Chicago, Ill.

WANTED.—To exchange one Holstein bull calf, nuclei and full colonies of Italian bees, for Hereford or Durham calves 3 or 4 weeks old, two-horse wagon, or a two-seat surrey.
J. N. COLWICK, Norse, Texas.

WANTED.—An active, capable young man to work by the month, or to run bees on shares for a term of years. Must have some experience, and give good references. B. WALKER, Evart, Mich.

WANTED.—To exchange one automatic guage lathe and one broom-handle lathe toward a shingle saw, planer, or circular-saw mill or sticking machine.
W. S. AMMON, 216, 218 Court St., Reading, Pa.

WANTED.—Young man to take full charge of 125 swarms of bees to run for comb honey on shares.
E. A. HARRIS, No. Petersburg, N. Y.

WANTED.—To buy 500 bu. No. 1 dry rice popcorn.
GEO. G. WILLARD, 270 Pearl St., Cleveland, O.

WANTED.—To exchange eight-frame L. hives and combs, all complete for bees. F. R. RANNEY,
Box 66, Comstock, Kalamazoo Co., Mich.

WANTED,—50 to 100 colonies of bees. We prefer them on L. frames. State lowest cash price wanted for same. H. G. QUIRIN, Parkertown, Ohio.

WANTED.—To exchange or for sale, 25 colonies bees in 8-frame L. hives; fixtures, hives, and foundation, for double wheel-hoe and beeswax.
F. H. MCFARLAND, Hyde Park, Vt.

WANTED.—100 colonies of good Italian bees to keep on shares. Have had experience in bee-keeping.
OKEY BORAM, Horner, W. Va.

WANTED.—American help for my apiaries. Give full particulars as to what you can do and what you want, in answering.
HENRIQUE HOWE, Artemisa, Cuba.

WANTED.—Position. Young man, single, experienced in bee-keeping, wants to work or assist in the apiary. References furnished. Address
J. F. STRAUS, Pulaski City, Va.

WANTED.—To exchange, Novice honey-extractor, almost new, and 2 honey-knives and 5 sheets of perforated zinc, for $5.00.
FRED. HOLTKE, No. 7 Pine St., Newark, N. J.

WANTED.—Assistant in apiary, one that has had some experience, reasonable wages, steady employment, no liquor or tobacco.
M. P. RHODES, Las Animas, Colo.

WANTED.—To purchase an apiary in the North. State prices. Box 6, Hebron, Boone Co., Ky.

WANTED.—To buy bees in New York. State prices on ground. A. CARDER.
Hebron, Boone Co., Ky.

WANTED.—To exchange 12 new improved 8-frame Dov. hives, Danz. top and bottom, Hoff. frames, empty super, for honey or beeswax; or cheap for cash. D. H. TWEEDY, Dillonvale, O.

Which is the Most Hopeful Field?

THIS is an age of specialty. Concentration of aim, energy, capital, and purpose accomplishes more than does a scattering of them in various directions. In this respect, bee-keeping is no exception. We have had many discussions as to what would best mix with bee-keeping; and the decision has always been, *some more bees.* Many a bee-keeper fails from keeping *too few bees.* Bees in limited numbers will probably always be kept by a large number of persons, and this is entirely right and proper, the same as a bee-keeping specialist may keep a few fowls, or plant a garden, if he really cares for that kind of work; but, as the years go by, more and more will the great bulk of honey be produced by men who follow bee-keeping as a business. This being the case, the question arises: In which direction is commercial bee-keeping susceptible of the greatest improvement? Where is light most needed? Which is the most hopeful field?

I think that the time was once when bee-keepers in Northern States would have unhesitatingly said: *The wintering of bees.* Perhaps some of them will say so now—and they may tell the truth too. However, we are doing so much better in this direction than we did years ago, as to leave it an open question whether wintering should be placed at the head or further down in the list.

The idea of planting specially for honey has practically been abandoned. It has been found much easier for Mohamet to go to the mountain than to bring the mountain to Mohamet.

Our hives, supers, extractors, comb foundation, smokers, and other implements, together with the methods for their manipulation, are probably not perfection; but if the bees will only bring in the nectar, these things enable us to handle it to pretty good advantage.

The devising of some plan whereby bees may always find nectar in paying quantities will probably never be accomplished; but we have had many reports of some strain of bees laying up a fair surplus while some other strain had to be fed. Here is food for thought. Improvement of our stock may not be the most hopeful field at present, but it certainly will yield abundant fruit if rightly tilled.

Our methods of putting up honey for market, and our systems of marketing, are great improvements upon those of the past, but they are decidedly behind the times as compared with the ways that some products are put upon the market. We need system, uniformity, co-operation, and business-like methods. Too many of us, when we have produced a crop of honey, think our work is done. It is only *half done.*

I have now mentioned a few of the fields in which I believe that we as bee-keepers may labor with fair prospects of receiving our just rewards. Which one ought to arouse our brightest hopes, I am unable to decide; and to the one who will, before May 15th, send me the best article on this subject, giving reasons why some particular field offers the greatest inducements, I will pay $5.00 cash. To the writer of each article, aside from the prize article, that is accepted I will send the Review one year and one of the Superior Stock queens.

If you would like to read the articles that will be written on this subject, subscribe for the Review. It is $1.00 a year; but to each subscriber for 1900 I will send 12 back numbers free. For $2.00 I will send the back numbers, the Review for 1900, and a queen of the Superior Stock.

W. Z. HUTCHINSON, Flint, Mich.

IMPROVEMENT OF STOCK

is becoming one of the foremost considerations with the progressive bee-keeper—a consideration that, in fact, can not be overlooked if one would attain any considerable degree of success. Remember, I do not base the claim of superiority of my strain of Italians simply upon their golden color, but upon their real worth to the honey-producer. Price of untested warranted queens, in season, $1.00 each.

Send for particulars, with "How to Build a House Apiary," as devised and perfected by the late B. Taylor. Free.

◆

JEWELL TAYLOR, Forestville, Minn.
Money-order Office, Spring Valley.

CHOICE HONEY QUEENS.

Last year, as the conditions were most favorable, I reared a large lot of queens from one of Doolittle's VERY BEST mothers. Only the best cells and virgins were used. I requeened a lot of my double-story ten-frame colonies with part of them. They are now running over with bees, though the season has been unfavorable. Prices of these queens are, tested, $1.50; select tested, $2.00; also untested, $1.00; dozen, $9.00. Send card for my circular. H. Lathrop writes: "I have bought queens from different breeders, and never got any that were better than those I got of you." **J. B. CASE, Port Orange, Fla.**

1900. Established 1872.

ITALIAN QUEENS.

My bees are good honey-gatherers; work well on **Red Clover.** Healthy and beautiful. One untested queen, 65 cts.; 2 for $1.25; 1 warranted, 80 cts.; 2 for $1.50; 1 tested, $1.25; 1 select tested, $2.00. Satisfaction guaranteed or money refunded. Queens sent in season. **C. M. HICKS, Hicksville, Wash. Co., Md.**

REMOVED!

EARLY QUEENS. W. H. Laws has removed his entire queen-rearing apiaries to Round Rock, Texas, where he will be better fitted than ever to fill orders for the LAWS strain of FAULTLESS 5-BANDED bees the coming season. BREEDING QUEENS always on hand. Price $2.50 each. I am also breeding the leather-colored stock from imported mothers. Tested queens, either strain, $1.00; 6 for $5.00; untested, 75c; 6 for $4.00. Queens ready in season.

W. H. LAWS, Round Rock, Texas.

We are Headquarters for the Albino Bee.

The Best in the World.

If you are looking for the bee that will gather the most honey, and the gentlest of all bees in handling, buy the Albino. I also furnish the Italian, but orders stand 50 to 1 in favor of the Albino. I manufacture and furnish supplies. Address

S. Valentine, Hagerstown, Md.

EGGS FOR HATCHING, Barred Plymouth Rock, 75 cts. per 13; Pekin Duck, 75 cts. per 11.
C. J. BALDRIDGE, Kendaia, Seneca Co., N. Y.

The A. I. Root Company,

10 Vine Street,

Philadelphia, Pa.

Direct Steamer for Florida, Georgia, North and South Carolina, Virginia, Maryland, Delaware, and all points East and South.

All orders sent to the Philadelphia office will have same attention and care as Medina. 1900 goods now in stock. Order before further advance. Full colonies of Italian bees $6.00, and 3 frame nuclei at $3.25. These contain guaranteed Italian queens, and raised in the sands of Delaware, where no bee-disease has yet been known.

Dr. Miller's Honey-Queens.

One Untested Queen and the American Bee Journal one year, Both for $1.50.

We have been fortunate in making an arrangement with DR. C. C. MILLER—the well-known honey-specialist—to rear queens EXCLUSIVELY FOR US DURING THE SEASON OF 1900. These Queens will be mailed in rotation, beginning about June 1, so "first come first served." We are ready to book orders now.

The queens Dr. Miller will send out on our orders will be precisely the same as those he rears for his own use, so of course they will be from his best stock. His best colony in 1899 had a queen reared in 1898; May 5, 1899, it had brood in four frames, and he gave it at that time a frame of brood without bees. It had no other help, but May 25 a frame of brood with adhering bees was taken from it, and the same thing was repeated June 3, leaving it at that time five frames of brood. It stored 178 sections of honey, weighing 159 pounds (and that after July 20, in a poor season), being 2⅔ times the average yield of all his colonies. A point of importance is the fact this colony did not swarm, and an inspection every week or ten days showed that at no time during the entire season was there even so much as an egg in a queen-cell. Dr. Miller expects to rear queens from this one during the coming season

The demand nowadays is for BEES THAT GET THE HONEY when there is any to get, and Dr. Miller has such bees. You will want to have a queen from his best, we are sure.

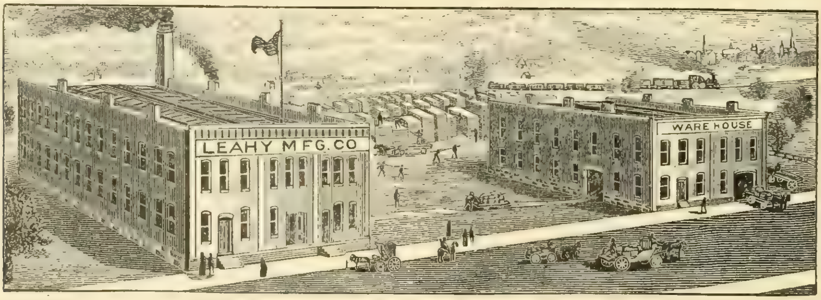
Don't send any orders to Dr. Miller, as all MUST come through us, according to our agreement.

Remember, send us $1.50 for the weekly American Bee Journal for one year, and ONE OF DR. MILLER'S UNTESTED HONEY-QUEENS. Queen alone, $1.00. Orders for queens to be filled in rotation, beginning about June 1st.

Headquarters in Chicago for Bee-keepers' Supplies,

Geo. W. York & Co., 118 Mich. St., Chicago, Ill.

Catalog and sample copy of the weekly American Bee Journal FREE. Send for them. Address as above.



For Apiarian Supplies, address LEAHY MFG. CO.
Higginsville, Mo.
1730 S. 13th St., Omaha, Neb.
East St. Louis, Ill.

GLEANINGS IN BEE CULTURE

A Journal devoted to Bees and Honey and Home Interests.

Illustrated Semi-Monthly

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STRAY STRAWS FROM DR C. C. MILLER

You are right, Mr. Editor; podophyllin is used in the cure of bee-paralysis *because* it is a purgative. It is obtained from the root of May apple, or mandrake.

Friend Aikin, are you not a little extreme, p. 253? If "it is absurd to think of producing honey so that it must be sold by weight," it is an absurdity of which many of us are guilty; for would it not be more absurd to sell at the same price a section weighing 20 per cent more than another?

Virgin queens are much harder to introduce than laying queens, *except* virgin queens just old enough to crawl out of the cell; these last are the easiest of all to introduce. [I cheerfully accept your correction. When I spoke of virgin queens I meant those that were four or five days old.—Ed.]

A lady asks how to start cuttings of roses. Take a slip of young growth, say one with a half-blown rose-bud at the end; take off the bud and cut into pieces two or three inches long; leave a leaf on each cutting; stick it in a saucer of sand kept *constantly* wet in a sunny window, or in a propagating-bed covered with glass.

The temperance people of Aurora, Ill., have conceived a unique plan to shut out saloons. They propose to raise $35,000 (the amount of the licenses), to be turned into the city treasury if saloons are voted out in the spring of 1901. Of the $35,000, $10,000 are now in sight, and the saloon men are doing some thinking.

Prof. Kirchner reports in *Bienenpflege* that cross-fertilized fruits are larger and heavier than self-fertilized, although the difference in fruit is not so much as the difference in seeds. Self-fertilized pears show an inclination to ripen later than cross-fertilized, but this is not so marked in early sorts. In the main, Prof. K. repeats what Mr. Crane said in Gleanings, although the two accounts are independent of each other.

The daily loss of bees in the cellar the past winter was just four times as much in the last 20 as in the first 100 days. [Right here I think we have a decided advantage in outdoor wintering. When there comes a nice warm day the bees, overcharged with fæces, can fly out and relieve themselves, and return to the hives. This, no doubt, saves a good many bees. The loss from outdoor wintering is greatest during the cold snaps when the mercury plays around or below zero, accompanied by a high wind.—Ed.]

Inexperienced bee-keepers sometimes propose shutting their bees in the hive in spring, when flying out would be injurious, such proceeding being frowned upon by the veterans. Now, however, in *Deutsche Imker aus Boehmen* a temporary imprisonment of bees in spring is reported as having been successful with practical bee-keepers, a good-sized antechamber being provided into which the bees can go and the old ones die, the bees being furnished, if necessary, with water, and perhaps pollen.

A correspondent asks, "What is the best hardy ever-blooming rose?" I don't know. The three I named on p. 249 contain perhaps the best one each of the three colors among remontants. Strictly speaking they are not ever-blooming. To get hardiness and successive blooms, try the polyanthas, say Clothilde Soupert. There's a whole lot classed as hardy ever-blooming; but when you come to try them you will find either that they need careful protection to coax them through the winter, or that they will be weeks at a time without a bloom.

Stenog will, I think, agree with Editor Hutchinson about compensation for destruction of foul-broody hives after he has studied over it. The grip pension would not be parallel. If I take the grip I'm entitled to no pension; but if you kill me so other people will not catch the grip from me, you ought to pay my wife part of my value—if she thinks I have any value. If you destroy my foul-broody hives, it's mainly for the benefit of others, and they ought to be willing to pay for the benefit. They do in some other countries. [Quite right. But I referred only to the bees and not to the hives.—St.]

LE RUCHER BELGE reports honey sold to hospitals "a raison de 96 centimes le kilogr.," and the editor says the producer could not have had more than 66 centimes per kilogram, or 6 cents a pound. He thinks no country in the world could have produced pure honey at such a price. Friend Wathelet, it is not a thing to be proud of; but it is nevertheless a fact that in this country thousands upon thousands of pounds have been sold at a less price, and sometimes at half that—fine honey too. Honey is now higher than usual, and quotations in GLEANINGS run from 6 to 8 cents a pound for extracted, or 66 to 88 centimes le kilogram.

"NO COMB HONEY in the markets;" "we do not know where there is any to be had;" "comb honey can not now be bought in the open market for love nor money;" are expressions I find in GLEANINGS. But I see no advance in price. Why is that, with a bare market and a general advance in prices of other things? [If honey were a staple article like butter, then the price would jump clear up; but just as soon as it goes up, consumers go without it and say they will take something that is cheaper. Maple syrup usually comes on the markets about the first of March; and if comb honey is not pretty well cleaned up by that time it is liable to hang over until new honey is in, and then there is quite a sacrifice in price on the old.—ED.]

SPEAKING of bottom starters in sections, G. M. Doolittle says in *Progressive*, where full sheets of foundation are used "I do not see any need of bottom starters, and I *never* could see wherein enough foundation was saved between the full-sheet plan and the bottom-starter plan to pay for the extra work of putting in the bottom starters." Bro. Doolittle, I don't save *any* foundation by using bottom starters, and I've put in thousands of full sheets without them, but I'm not sure of having such sheets fastened to the bottom unless I put in so much there's danger of sagging. And I don't care how solid your section is nailed, the comb must be well fastened for shipping. [I had never supposed the use of bottom-starters saved foundation. My impression was that it was for the purpose of making the bottom attachment, which attachment is certainly very important.—ED.]

"WRITE your Senators and Representatives, urging them to support any national pure-food measure that may come before them," p. 269. If I am correct, *any* pure-food measure will not do, as at least one has been pushed that we do *not* want. Rev. E. T. Abbott says, in *American Bee Journal*, "Urge . . . the Brosius bill as revised by the last pure-food congress. Also urge them to be on their guard against any attempt to side-track this bill in the interest of one which is backed by only a few individuals." [The editorial from which you quote was written before I heard from Mr. Abbott, and I hope all bee-keepers will urge their Senators and Representatives to support *only* the Brosius bill; yet the opposition, doubtless, will put up quite a number of bills of this character, the purpose being to divide the strength of the pure-food Senators and Representatives. That is just what the brewers did in our Ohio legislature. When they saw there was danger of our local-option bill passing, then other minor bills were pushed in to crowd in upon the calendar, and for the very purpose of inducing some weak-kneed members to accept these substitutes rather than the real measure that temperance people wanted. It is a very slick and easy way to defeat legislation; and it is therefore very important that the bee-keepers write their Representatives to support only the one bill, the Brosius, as revised by the pure-food congress. —ED.]

PICKINGS

FROM OUR NEIGHBORS' FIELDS.

BY "STENOG."

The drizzly rain, the swelling buds,
  The song of birds on trees,
All speak of spring's return at last,
  And end of winter's freeze.

The Chicago *Record* of Feb. 17 published a long account of some honey-caves in Texas, near the Mexican line. I make the following clipping from it which seems to comprise nearly all of it that may be considered reliable:

> There is enough honey in the brakes of Devil's River to make any man rich who will get it to market. There are tons of it; in clefts in the rocks, in hollow trees, in caves and in the famous "Devil's Punchbowl," which is a great sink in the Devil Valley, and out of which bees swarm always in clouds so thick that at a distance of two or three miles it has the appearance of a great signal smoke. The hills and valley land along the river are covered for a great part of the year with an endless variety of flowers; and in the winter season, which is never cold enough to freeze the bees, there is an abundance of decaying fruit—cactus apples and berries of many kinds—so that they never have to stop working on account of lack of material or bad weather, and thus go on piling up their wealth throughout the whole year. The honey is of an excellent quality, of good flavor and color, and brings as good a price when brought to market as that made by tame bees.
>
> The business of gathering this honey, while fairly profitable, is not followed to any great extent, for the reason that there is little in the work of the honey-hunter which is any thing like sport, and every thing connected with it is full of privation and danger. The country is so rough that it is impossible to get anywhere near the honey-caves unless one goes on foot, packing his camp equipage on his back or on a burro. Water is not overplentiful, and much of that to be found is unfit for use; and, besides all this, the actual getting of the honey is no easy task. Sometimes the caves are in such inaccessible places that the hunter has to let himself down the face of a cliff for two or three hundred feet, and hang there at the end of his rope while the bees sting him half to death, while he digs out a few pounds of honey; or, again, he may find a cave easy to rob, only to find that he must carry the spoil several miles on his back before he can get it to a place where he can load it upon his burros. But getting the honey is not all of the work. He must strain it and put it into cans, so that it can be packed out to the nearest trading-point.

The clipping was sent by the editor to the writer of the following letter, in order to get at the facts as nearly as possible:

Mr. E. R. Root:—As far as the story goes regarding the quantity of bees, caves, honey, etc., it was quite correct. The rough country in this border land is full of wild honey, and as good as the best ever made by bees. This Devil's Sinkhole is a reality, situated in Edwards Co., about 75 miles northwest of here. The rest of the story, including the signal-smoke feature, is only the production of imagination, etc.

Del Rio, Texas, Mar. 23. A. W. GILDEA.

The Devil's Sinkhole or Punch-bowl referred to is thus described :

> When the party reached it, like every one else seeing it for the first time they were amazed at the proportions of the wonder ; a hole forty feet in diameter, yawning open in the middle of a wide valley, with a perfect torrent of bees rushing up from it like dirt blown from some mighty blast, and all the while a roaring as loud as that of a great cataract ; looking down into the abyss, for the hole widens immediately below the surface, they saw the festoons of honey hanging there which the bees had strung along the sides of their mammoth hive after they had filled the hidden grottoes, and looked in through the upward swarms and saw the gleams of combs built, no doubt, many years before.

The account of an attempt to get the honey from this sinkhole with the assistance of some Mexicans is interesting, but reads like an exaggerated account of what might have been based on some real incident. It is not likely that such clouds of bees could find subsistence in such a place year after year.

* * *

AMERICAN BEE JOURNAL.

On p. 122 of GLEANINGS the inquiry was made whether sulphur would enrage bees. Mr. P. W. Stahlman, of New York, says, "It does. We found by experience, that in killing bees with sulphur, now and then a few that escape seem to attack a person very readily ; also after having used brimstone in the smoker, and then filling it with fuel, it still has a decided brimstone odor, and bees hate it and show fight at once."

* * *

A correspondent in Albany Co., N. Y., has the following to say regarding black brood :

> I never saw foul brood ; but from the description this so called black brood resembles foul brood very much ; it makes its appearance mostly in the unsealed larvæ, and at first it appears to show in the center of the white grub a small, yellowish dot on the larva, and finally this larva becomes yellow, some more so than others, and then it turns darker and darker, and at last is almost black, after which it dries down to an almost invisible object. It spreads as if by magic, and seems to be very contagious. As a rule it makes its appearance first among black and hybrid bees, the Italians almost always being the last to be affected. Sometimes in our yard a colony of Italians would be free from it, and in a flourishing condition, when surrounded by colonies rotten with the disease. Our bees were mostly destroyed to prevent its spread, and even water that we washed our hands in while working with the bees or honey was not allowed to be thrown where the bees could get it. In spite of all this, over 200 colonies have been destroyed, and many hives and fixtures have been burned

* * *

In describing the different kinds of people one meets in selling honey, Mr. S. A. Niver tells the following :

> In a small grocery an old lady was the only occupant that I saw, so I asked her if she kept honey in stock for sale. She replied, "We do ;" while a loud voice from behind a pile of flour, in unmistakable Kilkenny accents, says, "*I* do." He had plenty of honey on hand—that nice clear "honey" in tumblers, with a piece of comb in it, which never granulates, and sells cheap—and he knew it was pure honey, for he went to his wholesaler and saw him take the honey right out of the combs, and if I would go I could see them do it every day in the year ! How does that strike you, Mr. Editor? Extracting honey in a wholesale grocery house in February, thermometer down to zero ! But I accepted the gentleman's statement, and moved on, searching after more advertisers in the same line.

Here is some experience in another place :

> Only last evening I overheard a clerk telling a lady customer that you could easily tell when comb honey was genuine—"by noticing the number of layers in the comb." (I just held my breath to catch the rest of it.) "But whether it is one or two layers that show it to be genuine honey, I have forgotten." Simply another case of "Good indigo will either sink or swim, and I don't know which."

It seems sad that the human race is as incapable of exercising reason in common affairs as ever. The most absurd idea instantly goes around the world, while the plainest matter of fact is not accepted—especially in medical matters. A friend of mine said last week at dinner that he read in a paper that we had no full moon in February ; and I doubt seriously whether I convinced him to the contrary or not. Perhaps his editor was "full" enough to make up what the moon lacked.

BEE-KEEPERS' EXCHANGES—WHY AND WHY NOT.

Read Before the California State Bee-Keepers' Association.

BY C. H. CLAYTON.

I was pained lately to read in a prominent bee-journal an article purporting to give the reasons "why bee-keepers' exchanges fail." The article in question was from the pen of a former member of this association, and was wholly unsatisfactory in that the writer not only failed utterly to grasp the logic of the situation, but also failed to point out any adequate remedy for the evils complained of.

In daily speech, modern men and women pay tribute to the old order—the order which seems to decree that the bee-keeper's existence depends upon brawn and not upon brain. This thoughtless slighting of the bee-keeper's vocation seems curious when one pauses to observe how deeply the bee-keeper of to day is involved in the meshes of commerce. The successful bee-keeper of this generation must be a business man first, and a keeper of bees afterward. In him must be combined many talents. He must be a capitalist, cautious and crafty ; he must be an operator of industrial affairs, daring and resourceful, and he must play labor's part with patience and humility. He is in business as certainly as the merchant or manufacturer. And until the order changes, the bee-keeper's success in business will be governed by the kind and quantity of brains he uses.

From the flower to the ripened nectar, from the first operation in bee-keeping to the last, one is forced to realize how the spirit of the age has made itself felt here. The most desirable bee-keeper is not the fellow who can hit the punching-bag most lustily. He is the man with the cunning brain who can get the most work out of the bees without injuring them for future use. He is in the ranks of skilled labor.

In the bee-farm the investor has the use of labor-saving machinery to increase the output of his establishment; his profits are large or small according to the caprices of his market. He can not estimate with much accuracy what his cost of production is going to be at any season. The rains, the winds, the drouth, may cut his product short fifty per cent or wipe it out altogether.

During the period of time extending back for the last ten years, the business community in the entire country has suffered from what seemed to have been over-production. The result of this was to bring about excessive competition in all lines of business. Anxious to find purchasers, prices have been cut below the limits of reasonable remuneration. This evil of excessive competition seemed to prevail everywhere. In the effort to obtain relief the wages of labor were reduced. This only led to additional complications. The workingmen strove by the only means at their command to save themselves, and strikes and lockouts were instituted, and these were followed by the usual distressful accompaniments.

The only effective means of overcoming this condition seemed to be in the obvious one of an undertaking among the producers of various lines as to the prices to be asked for their various commodities. Regulation in this respect was possible only through a union of interests upon the part of those engaged in the same line of business. Ordinary trade agreements were hard to enforce, and were readily disregarded in the effort to obtain business.

Only a small fraction of humanity can be stirred by considerations of moral or mental advantages. In our greedy modern life the material side is chiefly regarded. By far the greater number challenge all things with the question, "What is there in it for me?" It is but the statement of a simple fact to say that the present tendency toward combination and co-operation is but the reaction from the keen and excessive competition of the past few years.

Whether this movement for co-operation is justifiable or not, depends upon the facts in the case; and whether for good or evil must be determined by the results. An impulse so general and so widespread in the business world must have cause for its existence.

The rights of the public are not to be ignored in any event; but so long as those rights are respected, the individual is certainly at liberty to concentrate his capital and combine his resources with those of his fellows in the same line of business for their mutual benefit.

A practical instance of the good accomplished by co-operation is the decreased cost of production by doing away with the wasteful method of competitive business. By constant study of the conditions of business in all its phases they are enabled to increase the demand for a product, and thus enlarge the consumption. If abuses should arise, these organizations are at all times amenable to the law. No combination will ever be able to maintain abnormal prices, for the reason that such a course would call into play practical competition, and this will always operate as a check. Any undue increase in price will lessen the demand.

The co-operative movement is the outgrowth of natural conditions, and opposition to it is based upon a misunderstanding of the fact that it is the application of a great and effectual remedy to the crushing and demoralizing condition which has resulted from unlicensed and excessive competition.

It is curious that we should have had growing up around us for the last three hundred years the very co-operative system of which philanthropists dream, and that men should have failed to recognize its features. If the day ever comes when all men shall have obtained a secure competency it will be when co-operation has become universal. There is no other road leading to the abolition of poverty.

Speaking generally, there will be no honesty in the world until men have been taught that all intersocial relations should be reciprocal, due to an interchange of service among equals. Any attempt to crush out or interfere with the proper and reasonable workings of this remedy is utterly hopeless. The movement is bound to continue until all industrial activities are brought into a system of co-operation.

Now a word concerning the opposition to the movement as experienced in the Bee-keepers' Exchange. I will name some of the reasons, as they occur to me, why the Exchange has found it difficult to attain that measure of success it deserves. I do not intend to be harsh, but I should be untrue to you if I were not plain.

The failure to perfect the organization, leaving out of consideration the failure of two crops in succession just as we were starting, is attributed to—

1. Selfishness on the part of many who desire to sell at the better terms offered by the great buyers on account of the agitation in favor of organizing. Such men say, "You are all right, but we have a crop of honey to sell, and are now negotiating to that end. *When we have sold* we will be with you, heart and soul, and do all we can to aid you in building up an exchange that will protect our interests. In the meantime, however, do not for the world abandon the effort to bring about a perfect and complete organization of the bee-keepers."

2. Crop mortgages, which prevent independent action on the part of the producers.

3. Concessions made to the producers in the way of rebate on commission, so much on supplies, or in any way that would be satisfactory to the parties interested. The inevitable result of such an arrangement is the lowering of prices to the producer by just that much, and it is a detriment to the honest buyer when he comes to deal with those who have not made this kind of deal. So the concession made to one operates to the detriment of all. Men are not in business for their health, and any thing of this kind is sure to be found out and taken advantage of.

4. Intimidation. Many have foolishly tied

themselves up, and are given to understand that siding with the movement might impair their personal interests.

5. Apathy on the part of some who do their thinking by proxy.

6. Jealousy on the part of some who fear that their neighbors may be as much, or possibly more, benefited through the Exchange than themselves.

7. Dissensions caused by differences of opinion as to how to proceed, and upon what plan the business shall be conducted. We have had our share of these, but, thank the Lord! I think they are a thing of the past. The school of adversity has taught us to look to results rather than mode or manner.

Our impressions of men and measures are too often superficial, being founded upon imperfect knowledge as to men, and meager experience as to measures. It seems to me to be humanly impossible for any one to arrive at a true solution of the problems involved in the workings of the exchange principle in the short period of one year, which length of time comprises the whole of our ex-president's experience in California. Others who have large interests here, and years of experience also, are not so ready to condemn the movement, even by implication, unless prepared to suggest something better. Too often we reach down into our minds and bring forth our thoughts, and put our brooding hypotheses into words, and show our acumen, and the searching quality of our discernment by shaping our conclusions and offering them to be examined. Talk of this kind does not consist of sworn statement. It is merely conversation, where fact is scarce, opinion abundant, and conjecture overflowing.

After years of study I declare to you that I see no other salvation except in some form of co-operation. You may call it a "combine," an "association," an "exchange," or a "trust," if you will, and try to legislate it out of existence.

Self-preservation is the first law of nature, and men must and will combine in furtherance of their mutual interests. Mistakes, many mistakes, have been, and doubtless many more will be made while seeking the best method of organization; but surely these mistakes should not discourage us, should not deter us from profiting by our past experience. There is no half-way place. We are fighting for our very existence, and we must be prepared to meet conditions as we find them.

These conditions are plain to all. Why, even the newsboys on the streets of this city to-day recognize them and are organized—associated together for the protection of their interests. Shall it be said that bee-keepers who, as a class, are among the most intelligent people in the world, can not or will not combine for the good of each other?

I feel deeply, earnestly in this matter. Three years now as secretary of the Exchange, I have been in close touch with the commercial world, and have had abundant opportunity to see the inside workings of affairs; and I tell you truly that, if you attempt to "go it alone," you will go as a lamb to the slaughter. You will be the legitimate prey of every harpy that seeks to live off the sweat of honest toil.

Lang, Cal.

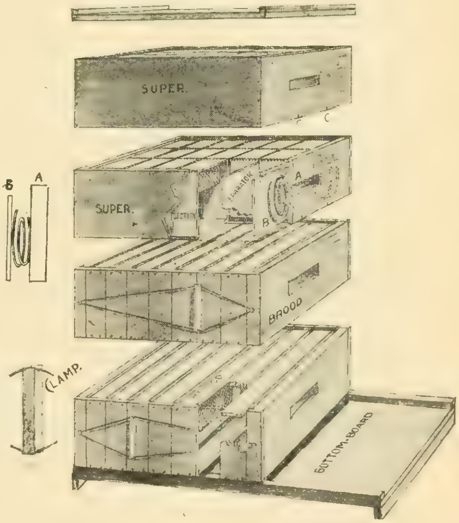
BINGHAM'S EXPANSIVE HIVE.

Its Special Features; How Constructed.

BY T. F. BINGHAM.

This is composed of 7 tight-end frames clamped or lashed together with a wire link or loop which is tightened by a stick which spreads the link, thereby shortening it so as to hold firmly the movable sides against the frames, rendering the whole practically a box which rests on a loose bottom-board having on either of its two edges a square strip ⅞ inch by 24. These strips, it will be seen, leave an entrance the length of the sides of the hive. Above this hive is a clamp (or super) holding 18 one-pound sections.

That is all there is of the hive. If not large enough, any number of just such hives and clamps of sections may be set under or over it to suit conditions.



It is desirable to have a weather case or box to slip over the clamp of sections and hive; but it may be used without, with a wide board laid on top to keep off the rain and sun.

The 7 frames hold 20 lbs. of honey net, and the hive and honey and bees weigh 24 lbs.—so light that any lady can move it to any part of the apiary.

In the fall, when the season is over, all hives not required to hold honey for winter are taken away and stored. Two such hives are ample to accommodate any colony of bees from September till May.

A very small colony will breed up rapidly in such a hive at any breeding season, while in the spring they are a wonder and a surprise.

People who have never handled frames so lashed together can form no real conception of the ease and satisfaction in their manipulation.

The inventor of this hive does not say that it is better than any other, but that it is well adapted to meet the requirements of skillful bee-keepers, and will prove a great pleasure and a delight, if nothing more. In any apiary, with skillful management, more honey with less hard labor may be obtained from this hive than any other that I am familiar with. One such hive in sections or parts may not secure more honey than one large hive in one box; but an apiary of them will do so if cared for as it can be. This hive does away with the swarming problem by using all the bees to the best advantage. Every pound of honey a colony may gather above the brood-nest may be secured in the handsomest sections ever used, 3⅞×5. As this hive can be reduced to any size, the smallest third swarm may breed up and be No. 1 for winter, while a second swarm may store surplus in sections. If one division of the hive is too large it can be reduced by using fewer frames.

As the bees are wintered in two hives, one above the other, it may transpire in spring that they would do better a while with but one. In such a case, only one would be used. Later on, when two or more of the brood-cases are full of brood and bees, but no honey in the fields, one of them may be set down beside the other one, or taken to some other part of the apiary and allowed to hatch its brood and get ready for the coming harvest.

The time is likely to come when such a hive in a poor locality may be the only means of getting nice honey in paying quantities. In the older States the forests have been cut away, and the wild flowers cultivated out. In such locations a special management is required, and an elastic hive needed.

The super or clamp shown is a T-tin one, with tight wooden separators ⅛ inch thick. One of the separators is used as a follower, against which press two coiled wire springs holding the sections firmly, and using practically no room. On the side opposite the springs is a glass covered by a hinged door for easy examination. This enables one to watch the progress of work in the supers.

Farwell, Mich.

[At the Michigan State Bee-keepers' convention Mr. Bingham exhibited the hive which he had used for so many years, but upon which he had made some recent improvements; seeing which, our Mr. Calvert was quite favorably impressed with it, and he accordingly asked Mr. Bingham to send us a description of it and a hive. From the latter we have made an engraving, and the whole is produced above.

Knowing that Mr. Bingham was one of the pioneers—possibly the first man who used closed-end frames—I asked him for some of the particulars, and in response he sends one of his old catalogs, bearing the date of 1867. This shows his first hive—a hive that he patented in 1866. This had triangular frames, the end-bars of which were closed up part way, making what might be called a half-open and half-closed frame—virtually a Hoffman frame turned upside down. If you can imagine a Hoffman frame triangular in shape, with half-closed ends meeting together at their ends instead of joining a bottom-bar, you will form a pretty good impression of the original Bingham frames. These were lashed or secured together by means of the wire loop, as shown above.

It was this frame and hive that was exhibited at the New York State fair held in Utica in 1866. Father Quinby, Mr. Bingham, writes was present at that fair, and came to see the new hive—the special features of which were explained to him at the time.

But Mr. B. soon discovered that such a frame, while it had some very nice features, was too large; and as the honey-extractor was just then being put on the market, he saw at once that the *shape* of the frame would have to be changed if it were to be adapted to that machine. Accordingly the end-bars were made parallel, and the whole frame changed to a shallow frame oblong in shape; but the uprights were made closed all the way up, making what would now be called a closed-end frame pure and simple.

In 1868 father Quinby introduced his closed-end frame and hive which is now used very largely in New York, with very little change.

I do not think there is any attempt or desire on the part of Mr. Bingham to deprive Mr. Quinby of the honor of inventing the closed-end frame as it is used to-day, but it would appear from what is given above that Mr. Bingham possibly gave Mr. Quinby the suggestion that led to the invention of something that is almost equal to the invention of Mr. Langstroth. Indeed, the closed-end principle is gaining advocates, and the time may come when closed-end frames will be the ones commonly used instead of open ends or partly closed, such as are now used.

If there are those living who are able to correct or throw a little light on this closed-end-frame question, I should be glad to hear from such.

The copy of catalog and booklet that Mr. Bingham issued in 1867 describes briefly the management of bees, and particularly his new hive, with half-closed ends. He writes that the Patent Office records of 1866 describe his hive more in detail.—ED.]

BLACK BROOD.

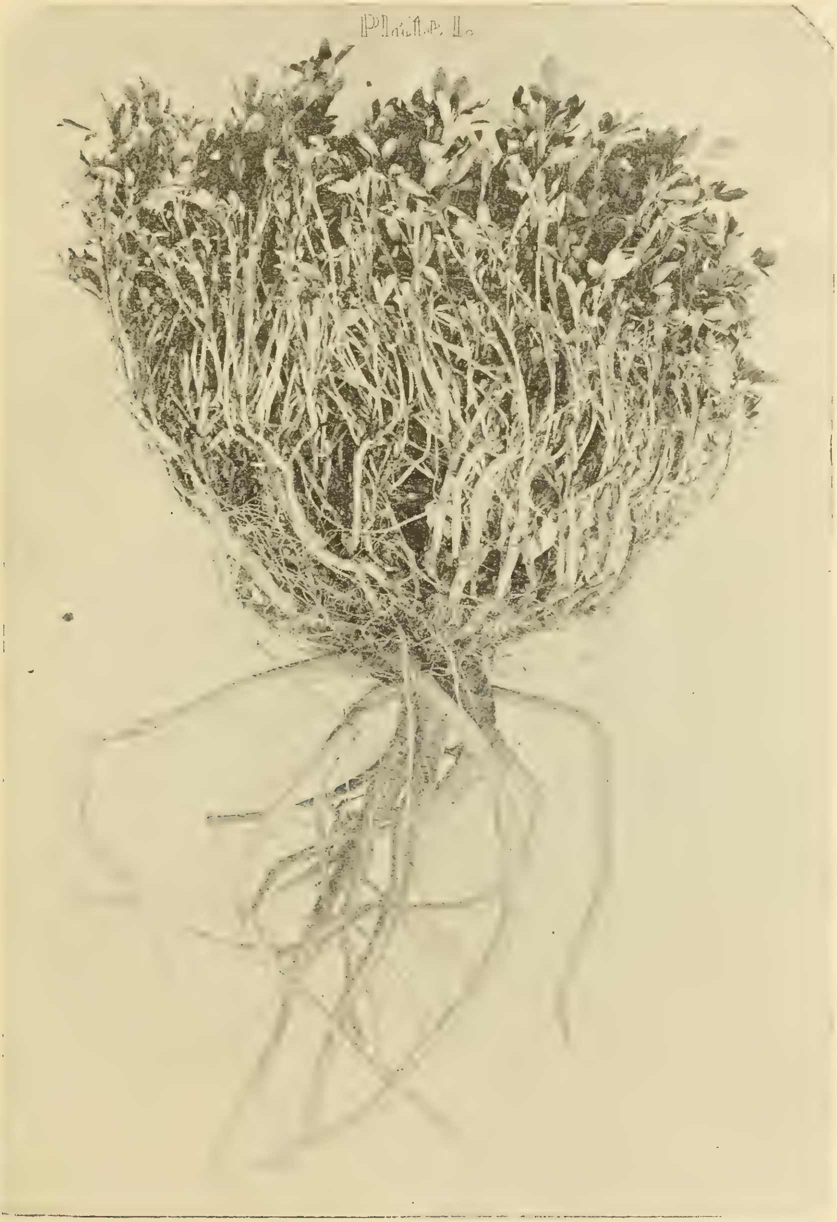
The Difference Between Spores and Germs; the Malignant Character of Black Brood.

BY DR. WM. R. HOWARD.

In correspondence with several of the leading bee-men of the country, to whom advanced proofs of my report on the New York bee-disease were submitted, questions on certain points of practical interest — longevity of spores, caging queens, disinfection, etc., have come up for further explanation and consideration. I now have these and many other points undergoing experiment, which can not be completed before spring.

SPORE-FORMATION.

Opinions not based upon facts demonstrated by actual experiments can be of no practical value; but a few general remarks upon spore-formation and its application to this disease will be of interest. *Bacillus milii* belongs to a form known as *endosporous*—spores formed within the bacillus or germ. *Bacillus thoracis* belongs to the so-called *arthrosporous* form, in which the spore separates itself from the rod or germ by fission or transverse section, and does not form within as in *Bacillus*

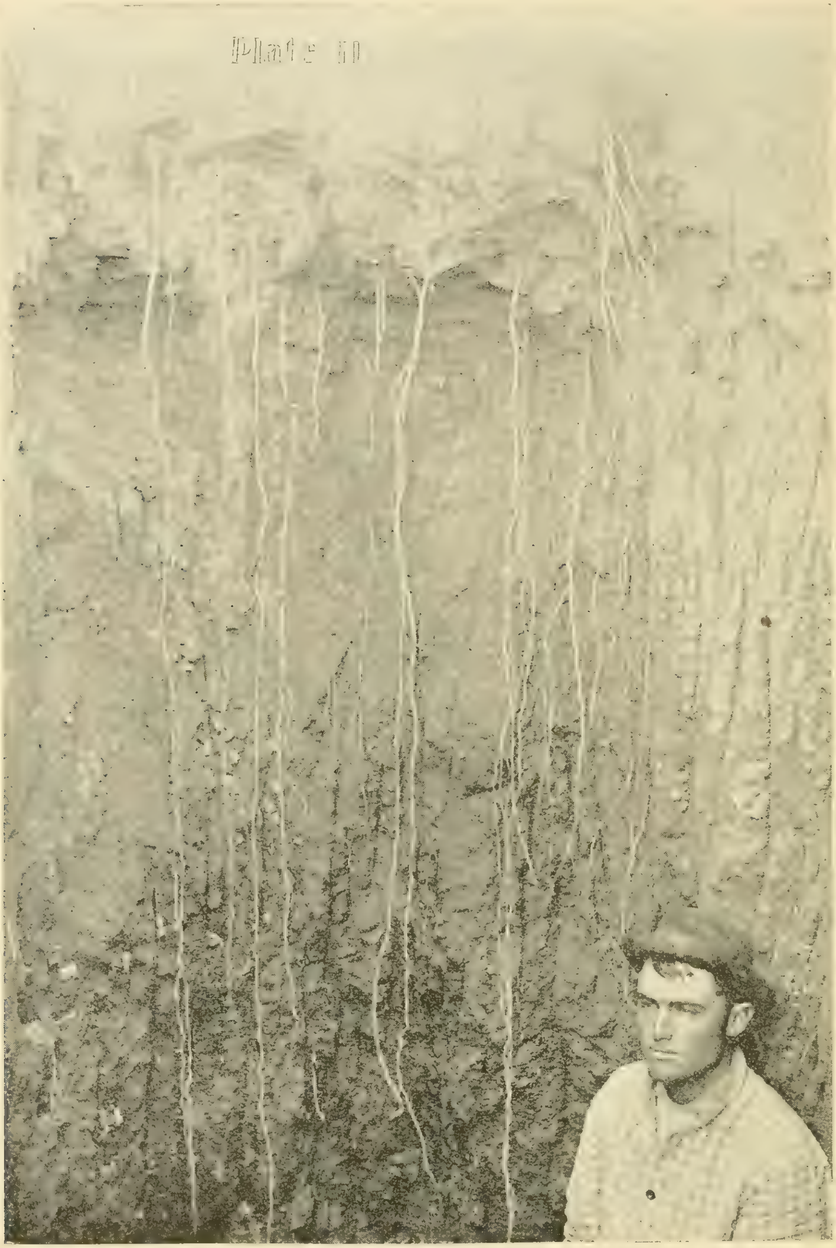


THE CELEBRATED ALFALFA PLANT AND ROOT.

The plant represented in this plate grew in a rich, loose soil, with a heavy clay subsoil and an abundant supply of water, the water level ranging from 4 to 8 feet from the surface at different seasons of the year. The diameter of the top was 18 inches, and the number of stems 360. The plate shows how these crowns gather soil around them, for the length of the underground stems is seen to be several inches, and this represents the accumulation of nearly this much material about it.

This is one of the largest plants that I have yet found. The specimen, as photographed, was dug April 30th, 1896.—*Dr. Headden, in Bulletin No. 35, "Alfalfa."* See Editorials.

milii. In some species spore-formation takes place only when the pabulum is about to be exhausted, and remains at rest until a new nutritive medium is furnished, when they vegetate and again become *bacilli* or germs. There are other species which form spores when the conditions are most favorable for a continued development. The spore-formation of the germs under consideration belongs to this latter class.

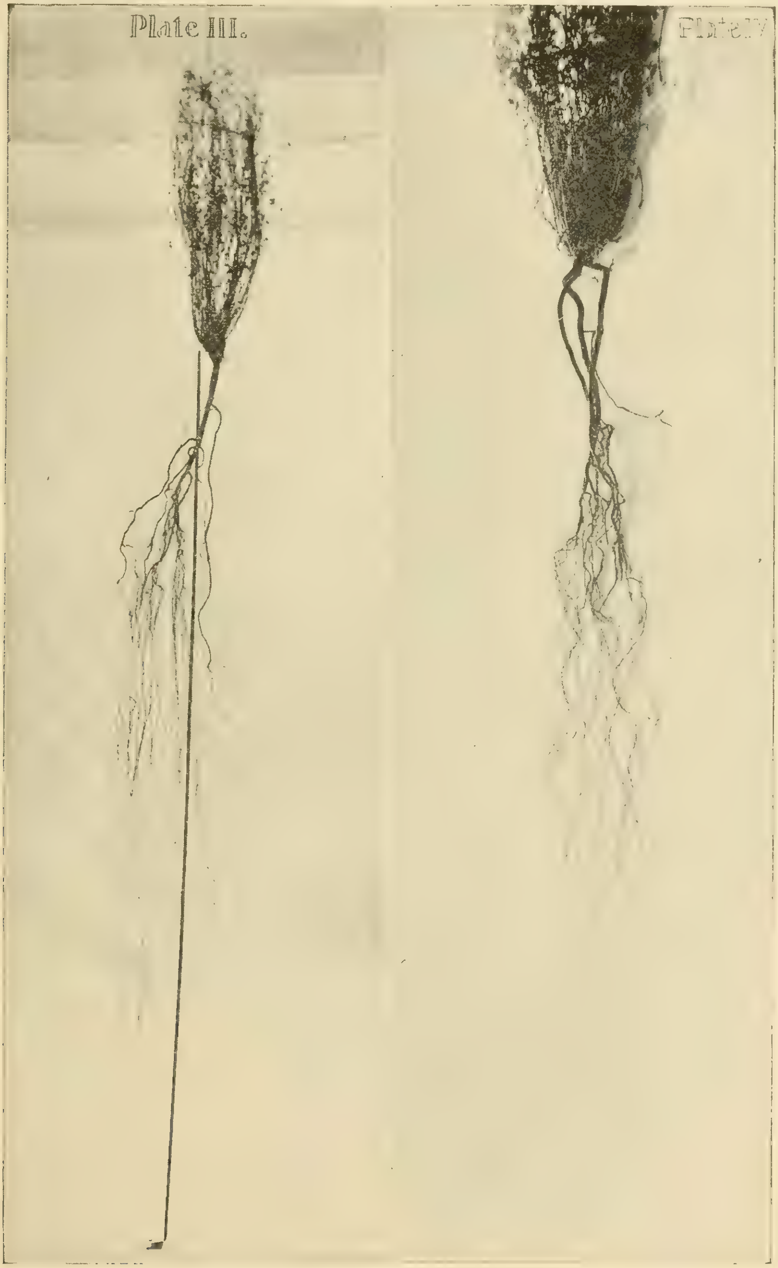


ALFALFA ROOTS OVER TWELVE FEET LONG.

This cut represents the face of an opening made to the depth of rather more than 13 feet in an alfalfa field on the Experiment Station Farm, at Rocky Ford, Otero County, Colorado. The soil is a fine alluvium. The roots penetrated to a depth of 12 feet 6 inches, and the simplicity of the root system is well shown, the roots being shown in their natural position. The upper margin of the photograph represents the surface of the ground, which lacks sufficient sharpness to show the crowns and stubble in the picture.

This alfalfa was four years old, and cut from four to five tons of hay per year. The diameter of these roots, just below the crown, averaged a little less than ½ inch. See Editorials.

The relation of spores to germs is quite similar to that of seeds to plants. Spores possess a greater resisting power to drying, heat, chemicals, atmospheric changes, etc., than do the germs themselves. Spores of *endosporous* bacteria are more resistant than those of the so-called *arthrosporous;* accordingly, spores of *Bacillus milii* would have greater resisting



LARGE SPECIMENS OF ALFALFA ROOTS.

The two succeeding plates represent the largest alfalfa plants I have seen. The root system and the tap roots are exceedingly large; they were very nearly the same length—11 feet 9 inches—measuring from the crown of the root to the deepest point to which the roots had penetrated. They were not dug at the same time and are different types of roots. The tops of these plants measured over 5 feet 3 inches. They were obtained on the place of Mr. J. H. Walter, in Weld County, Colorado. See Editorials.

power than those of *Bacillus thoracis*, all other things being equal; but *Bacillus milii*, being *anærobic*, growing better without oxygen or atmospheric air, the exposure of these germs or their spores to the atmosphere would possibly prove detrimental to their vitality. While *Bacillus thoracis* is *ærobic*—thrives better in the atmosphere, it would possibly resist atmospheric influences for a longer period. The spore formation of *Bacillus alvei*, the germ of foul brood, has been carefully studied, and, although *endosporous*, and retires to the spore or resting stage only when the food medium has lost its nutritive qualities, the spores lose their vitality in 24 to 36 hours when exposed to the atmosphere. [Author's *Foul Brood*, p. 21.]

Again, the larvæ and pupæ alone are attacked, and it has been shown that the disease does not spread through the atmosphere. [Author's *Foul Brood*, p. 12.]

When all of these points in the biological characters of the germs of *black brood* have been made plain we shall then have a definite knowledge of that with which we have to contend; for here is a disease in which it is strongly suspected that flying bees are affected; and of these, thousands daily leave their hives never to return, scattering the germs far and wide, to be borne by the strong winds, or wafted by the gentle zephyrs to new fields of infection. Much careful work yet remains to be done; but it will take time and constant attention to detail—many experiments, hundreds of cultures and trial cultures to be made, testing the powers of resistance to certain environments, before anything definite or reliable can be obtained.

CAGING QUEENS.

The impracticability of caging queens is fully appreciated; but the apparent necessity in our present light makes it worthy of trial. Bees are naturally restless and discouraged when the queen is caged. When in a starving condition, or affected with a disease which interferes with or disturbs brood-rearing, any condition which causes rapid depopulation produces a tendency to swarm out or leave their hive, and caging the queen augments this general uneasiness. More especially is this so in weak colonies during a dearth of honey in the field. During a good honey-flow this general disturbance is reduced to a minimum—first, because bees are encouraged by the new honey; and if strong in numbers there is less uneasiness attending the abnormal condition within; and, secondly, the dark masses containing the germs are usually covered up for the time being, and to a greater or less extent the disease disappears; consequently the bees do not seem so distressed. In connection with caging queens, feeding inside of the hive, in the evening, until the combs are well filled, will have a tendency to allay this uneasiness.

In treating foul brood and pickled brood, after making the stocks strong by uniting I have caged the queen and fed generously within the hive, and had fair success in holding the bees quiet until all danger was passed.

Another plan which dispenses with caging queens, in a great measure safe and worthy of trial: In the modified McEvoy plan, instead of caging the queen, feed heavily within the hive the salicylated syrups* for at least ten days. All of the germs deposited for the first five days would fail to grow, and would be removed when the full sheets of foundation were given; and if these syrups were continued five or six days, or longer, there would be no immediate recurrence, and possibly a permanent cure.

DISINFECTION.

Boiling hives and fixtures for an hour in water would answer fairly well; but the temperature could not be raised to that of boiling oil or superheated steam. New York Foul-brood Inspector N. D. West's plan of holding a hive over a large gasoline torch or flame, would completely disinfect all surfaces reached by the flames. Moist heat is more destructive to germ life than dry heat.

In conclusion let me say that sufficient evidence has been presented to show that we have something new, and at present, apparently, more malignant and more destructive than the worst enemy hitherto known; but careful, practical, and experimental work in the presence of this disease when at its worst will, I feel confident, discover some practical plan for its successful eradication.

* * *

STARTING AN APIARY IN CUBA.

Some of the Drawbacks.

BY HARRY HOWE.

Having at last decided in a general way where the new apiary was to go I began to figure on what I will call the immediate location. Here again there was a wide choice; but when I began to try to rent the various pieces I found that there were but few that I could get at any price. Finally I went to a man who has some very large tracts of land, and tried to get on some corner of that. Instead of renting me the land he made me a proposition to go in partnership in the bee business. It seems that he had 2000 colonies in box hives before the war, and now he wanted to replace them with modern hives. After much discussion of details we fixed up some terms that we could both agree upon, and made out the papers. This gives me absolute control of nearly all of my bee-pasturage, for we can locate ten apiaries on the farm without crowding. As a matter of fact, I have located my first three apiaries along the good stone road on one side of the farm in order to have possession of those good locations which some one else might get by going on the other side of the road. The places back in the center of the 6600-acre tract can wait.

There are two other men in the same town who own large tracts of land, and who would like to make similar deals with some practical bee-man.

Along the stone road is a strip that is under cultivation; but back of that, clear to the sea, eight miles south, are forests and swamps which make the finest bee-pasture. I had bought two small apiaries about ten miles from my new location, and this week I moved them over. They came for them with two large carts, each drawn by four oxen. The two wheels were six feet across, and were able to carry 10,000 pounds of sugar-cane, so the eighty colonies of bees with all of the fixtures, loose boards, etc., did not make much of a load for them. It took until midnight to get started, and then the drivers got lost, and wandered for miles over the very worst apology to the name of road one can imagine—pitch-holes three feet deep ; stones as big as bushel boxes, and in one place a river ford—every thing bad imaginable, to say nothing of the loose bees. About the first jolt smashed one big box hive out flat, and the second opened the joints on several more on the load on which I rode.

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*Sodium salicylate one ounce, water five gallons, white sugar forty pounds. Make syrup without heat.

Pretty soon the driver gave a war-whoop and a big jump which landed him out on the ox-yoke of the first team. There he rode the rest of the way while I sat on the back end of the tongue with a smoker, and kept the bees off the oxen.

The other loads were in American hives, and stayed tight except one which got a hole in the wire screen. But all things end; and just before sunrise we landed at the proposed location, and I began to unload alone. No one else would touch them. The bees were all over the outside of the hives and all over the cart. Now, to take 80 big colonies of bees out of a high cart, and carry them out and put them in place, takes some time, and is rather hard work for a man who has worked for the previous twenty-four hours, but it had to be done.

When the last entrance was open, and I had time to take account of stock, only two were completely done for. This was a great surprise to me.

I put all of the broken comb in one pail aside from the one that was completely smashed. I had a big pile of railroad iron to use for hive-stands, but no one to help put it in place; so after I had my dinner I got on my wheel and rode over to the next town, twenty miles, and hired an American friend to come back with me the next day. I now have this lot of 80 standing in pairs on the railroad iron, waiting for my sheds to be finished. The two other apiaries will be put in place in a few days. Then I shall go in to make my increase for the next season.

The present apiary is still waiting for a name. There is a pumping engine for irrigating, handy by, to use in cooking wax and making foundation. One of the other apiaries will also be near a pumping-plant. These private irrigating-plants are all over here. Generally they are worked by a horse or a yoke of oxen. The well near me is 10 feet across, and 180 deep. A six-horse-power boiler and a duplex pump brings up a lot of water, while the increased growth of the tobacco shows the value of it.

San Francisco de Paula, Mar. 19.

FOUNDATION IN SECTIONS.

Temperature in Cellars; a few Questions for Dr. Miller to Answer.

BY MORLEY PETTIT.

Dr. Miller's Stray Straws are always very interesting ; and as I glance over them I am tempted to make comments.

First, I should like to ask the doctor which way he hangs foundation in sections. I have handled a great many sections which had foundation fitted as close as R. F. Holtermann describes, p. 924, but hung the "strong way," i. e , with corrugations vertical, and there was no buckling. The bottom starter makes twice the trouble, and should be avoided if possible.

That wet cloth, p. 6, for quieting the bees, is a capital idea, I should imagine. How about an entrance-guard? A little porch can be made of wire cloth and four pieces of lath ; two end pieces of whole lath 3 in. long, and two strips of lath ripped in two, one against the hive and the other against the floor-board. We have enough to go over the whole apiary, and they are very convenient to lay on the entrance whenever hives are to be closed for a while.

In taking temperature readings in the cellar, where should the thermometer hang for best results when it registers 45° F.? Mine hangs about the center ; and at 45° I consider the bees decidedly noisy. During some zero weather at New Year's day it got down to 38 to 40°, and they were almost absolutely quiet. The trouble this winter has been to keep the temperature low enough. I should like to hear the verdict of others on the temperature question.

Now, I should like to ask Mr. Doolittle what is the nature of his soil. It must be very light, for with our clay loam I could not conceive of his cellar being sweet without some sort of ventilator. His bees must be like Dr. Miller's, which so ungratefully desert the watering-trough during a honey-flow.

Belmont, Ont., Jan. 20.

[Dr. Miller replies :]

I have generally, if not always, hung foundation in sections running up and down the long way of the strips received from the manufacturers. I have had blind faith in them that they knew which way was best ; and if the other way is better I hope they will change. Even suppose there is no buckling, I am wondering if there will be quite as good work done without a bottom starter. If so, I should certainly prefer to omit the bottom starter.

A proper entrance-guard that will quickly close and unclose a hive is a very desirable thing. I used them exactly as described until I found something I like better. The ones I now use are entirely of wire cloth, with a single stick to fasten them on the hive. They are made especially to suit the entrance when the bottom-board has the deep side up, making an entrance 12⅛×2, but might be varied for any entrance. A piece of wire cloth 13½ ×4 inches is doubled over at the bottom, and at each end ¾ inch or less (bending it over a saw-blade), so that it will be just long enough to fit inside the 12⅛ entrance. Then a piece of lath holds it with one or more nails. This gives all the ventilation needed for spring and fall hauling.

But the wet cloth is far and away ahead of a wire entrance-guard when it comes to shutting bees in the hive when carrying in the cellar. Shut bees in with wire, and they are more anxious than ever to get out, the excitement being mischievous. They shrink from the wet cloth, and conclude they *don't want* to get out; so the cloth can be taken away as soon as they are placed in the cellar, leaving them quiet. Ordinarily, however, there ought to be no necessity for fastening the bees in when carrying them in cellar.

Answering your question broadly, friend Pettit, I should say that it matters little in what part of the cellar the thermometer is hung, providing it is always hung in the same place. Mine hangs close by the door, because convenient. Neither do I think 38, 40, 45, or any other number of degrees the right place to set for every bee-cellar. The right temperature for *your* cellar with *your thermometer* is that temperature at which the bees remain most quiet, whether it be 40° or 50°; and that temperature is to be determined, not by any single observation, but by a number of observations at different times. There is no little variation in thermometers. I've stopped long enough to put seven thermometers together down cellar, and let them get settled, and they read as follows: 36, 42, 42, 42, 44, 44, 44. The first was a rather fancy affair, more for looks than for use. But I've seen a greater variation than that among a lot in a drugstore, all looking about alike. C. C. Miller.

Marengo, Ill.

MARKETING EXTRACTED HONEY.

Liquid vs. Candied; the Other Side Discussed.

BY CHALON FOWLS.

It's ludicrous to me, the way so many editors and correspondents are now running to embrace Mr. Aikin and his plan of selling his honey candied. I can imagine Root, Miller, and all the rest, shouting in chorus, "Oh! come to my arms, my dear fellow; your plan is just what I've always wanted; of course, I believe it will work; I've *always wanted to believe it.*" It is said he has succeeded, "grandly succeeded," as Dr. Miller puts it, but—succeeded in what? In disposing of his crop? Yes. But is the price remunerative? Ah! That's the *vital point* with me. This reminds me of an old story. A very learned though somewhat conceited man was being rowed across a swift-running stream in an old leaky boat. Oblivious to his danger, the learned man sat studying the heavens; but at last, noticing the boatman straining at the oars to get the boat across before it swamped, he said:

"Do you understand astronomy?"

"No," said he.

"Then," said the learned man, "one-fourth of your life is gone."

As this seemed to have little effect, and seeing the birds and fish, he said:

"Don't you understand any thing about zoology?"

"No," said he.

"Then," said the learned man, "half of your life is gone."

At this juncture the old boat struck a rock, and began to leak rapidly.

"Do you know how this rock came here? Do you understand geology?"

"No," said the man, taking off his coat.

"Then three-fourths of your life is gone."

"That may be," said the man; "but I am going to quit this sinking boat, and swim ashore. Can you swim?"

"No," said the man of learning.

"Then the *whole* of your life is gone," said he, as he struck out for the shore.

Now, supposing I have bees enough to gather enough honey, when sold at remunerative prices, to support my family, and the seasons are such that there is honey in the field to be gathered, and I am skillful enough in management to harvest a good well-ripened and fine-flavored article, and am still lacking in this *vital point*—am unable to get a fair price for it, all my skill and learning will profit me nothing. The great flood of adulterated honey, thin unripened honey, bad-flavored and dirty stuff, will overwhelm me, and I shall go down. In other words, I must get more than the price of sugar, and more than glucose mixtures, to make my living at the business. If I can't get more than the price of sugar I had better quit the business and go to raising beets and make sugar.

Now, I don't want to find fault with Mr. Aikin or his methods, for it may be the best that he can do in his locality, as his honey is alfalfa, and candies so quickly; but granting his plan to be the best in Colorado, it does not follow that it is best in the eastern part of the country, where we have different honeys.

I want to make an earnest protest against all this talk about classing honey with sugar and other sweets. I never let my customers work any of that heresy on to me. I say to them, "I am not selling you honey for sweetening; it's flavor I'm selling—the aroma of the flowers—and all you pay in excess of the price of sugar you are paying for flavor, just as you do when you buy maple syrup."

I suppose the advocates of selling in the candied state will claim that it is safer to ship, which I freely admit; but that does not apply when selling in one's own vicinity. They will claim that it is less work, which I am not so willing to admit. At any rate, the work comes at a time when I am not so busy, which I think will offset the little extra work entailed in sealing it up tight.

Dr. Miller speaks of gathering up honey from the groceries to remelt; but if the work was properly done the first time, there will be very little of this to do; at least that is my experience with clover and basswood honey.

I have just been to examine my stock that has been taken back, and find there is less than one per cent taken back within a year. The grocers often offer to melt up the small amount that has become candied, but I always tell them I prefer to do that myself, as it is so easy to spoil it by overheating. And right here is a serious objection to the plan of giving the consumer his honey candied. A large proportion will be ruined by overheating; and it won't help the matter any to say it was their own fault, as the directions were on the can. After a customer has spoiled his honey he will be likely to try something else next time.

It may be said that the people should be educated to eat honey candied. I reply that candied honey is in an unnatural condition, and we should try to supply it to the people in as nearly the natural condition as stored by the bees as may be practicable; and the most feasible way is to seal it up tight in the liquid state; and the liquefying should be done by an expert, as the danger-point is at a lower temperature with some honeys than with others.

If I were to peddle from house to house I think I could sell candied honey; but I have about given up this kind of work. For various reasons it is more satisfactory to sell to the grocers; and for purposes of display, candied honey is "not in it" at all. Most people buy honey because it looks tempting—yes, twice as much will be sold when put up right and in plain sight.

"Out of sight out of mind" fits the case exactly. I asked one of our grocers if olives sold any better in glass cans than in tin, and he said, "Yes, they will take the glass bottles every time, even at a higher price." People don't like to buy a cat in a bag.

In conclusion I wish to call attention to what Wm. A. Selser is doing. He liquefies and bottles his honey, and grocers are selling it at 15 and 25 cts. for half-pound and pound bottles, and his trade now reaches 40,000 pounds a year.

Gentle reader, consider these prices. For my part I find them very interesting and inspiring; and then, go thou and do likewise.

Oberlin, O.

[Say, friend Fowls, if you will take a trip through Colorado, and study the markets and their conditions, you may have occasion to change your mind. What may answer for you and your market might not answer for them. This whole question is a good deal a matter of education and locality. Why, there are many who eat the candied comb honey as they would so much candied confectionery, and they prefer it.

Your position is exactly right for you and Oberlin; and in saying that, I wish to draw attention to the fact that white-clover honey under the same conditions will remain liquid much longer than alfalfa. If you had such honey to deal with, you possibly would find, inside of six months, fifty per cent of your honey to take back and reliquefy.

Referring to candied honey you say a large proportion will be ruined by overheating because the average consumer does not know how to handle it. Are you *sure* of that? No danger of overheating unless he or she puts the can right on the stove; and most people would stop long enough to read the label wherein it is directed to put the can into hot water.

There is no doubt you could do a better job—that is, make the cans present a prettier appearance, for you know just how to pour the honey, how to seal it, and how to relabel, when that is necessary; whereas an awkward bungling grocer might make a bad mess of it. —Ed.]

CANDIED COMB HONEY.

How to Save Both Comb and Honey.

BY M. M. BALDRIDGE.

A bee-keeper says, on page 88, that he has some frames of honey in which about one-fourth of the cells are filled full, or nearly full, of candied honey. He says he has tried a number of plans to remove the honey and save the combs, but thus far has failed to do so. The editor replies that the best use to make of such combs that he knows of is to put them into the solar wax-extractor next summer and melt them up; but that, if there is another and better way of treating them, he would be glad to know it.

Now, my plan of treating such combs is to uncap the sealed cells and extract the liquid honey, if any, and then fill the empty cells full, or partly full, of water. I then set one or more of the prepared frames of honey in an empty hive, and under or over a strong colony of bees. Sometimes I remove one or two combs from the brood-chamber, and replace with the frames of candied honey prepared as stated, with water. Any of these plans will do. The bees will then liquefy the candied honey and remove it from the combs, and with no loss of honey whatever, nor damage to the combs.

A good way to fill the cells with water is to lay each comb flat side down in a clean wash-boiler, and pour the water over all the cells with a dipper or a tea-kettle, from the height of a foot or so. Then turn the comb over and fill the other side with water. Now rest the comb in the boiler right side up for a few minutes, and let the water drip. The comb is now ready to give to the bees. The plan given is both simple and practical, and no one need lose a drop of honey, nor worry hereafter over combs of candied honey.

One spring I treated more than 100 frames of basswood honey, candied nearly solid, as stated, and with no loss whatever. In fact, for several years past I have had each spring a number of combs I have been compelled to treat as stated, with water. It is, of course, some trouble to do so; but I find that it pays, for I can then "kill two birds with one stone." It not only saves without loss both comb and honey, but at the same time it gives my bees water to nurse the brood.

I find sometimes that more than one treatment is necessary to enable the bees to liquefy all the candied honey. This depends, of course, on how many empty cells there may be to hold the water. In that event I repeat the treatment once or twice. But the second treatment is generally sufficient.

St. Charles, Ill.

SHOP-TALKS.

Improvement in Stock.

BY UNCLE LISHA.

"Good morning, Mr. Simpson."

"A jolly good morning to you. How are you?"

"Pretty well," said I. "What are you up to nowadays?"

"Why, bless your soul, I am building me a new patent stall for my colt?"

"Something new, isn't it?" said I.

"Yes," said my neighbor Simpson, with his round full face all aglow. "You see one of them 'ere agents came along selling rights, and I bought a right—cost only five dollars, and I can make as many as I want."

"What sort of a thing is it?" I inquired.

"Oh! it is a large square concern with a ventilating arrangement and a curious feed-box, and a peculiar floor, and a door for an entrance, with a new-fangled lock to keep out thieves. The agent said horses will do better in this stall than in any other stall ever made; and my woman, she says she thinks I will get a premium next fall on my colt if I keep it in this stall."

"I see," said I. "A great many bee-keepers have used patent hives to keep their bees in. I was looking over an old volume of the *Amer. Bee Journal* the other day, and a man some thirty years ago was telling how he had secured in his patent hive 125 lbs. of the whitest box honey, and a new swarm, as an average from each old colony, in one season."

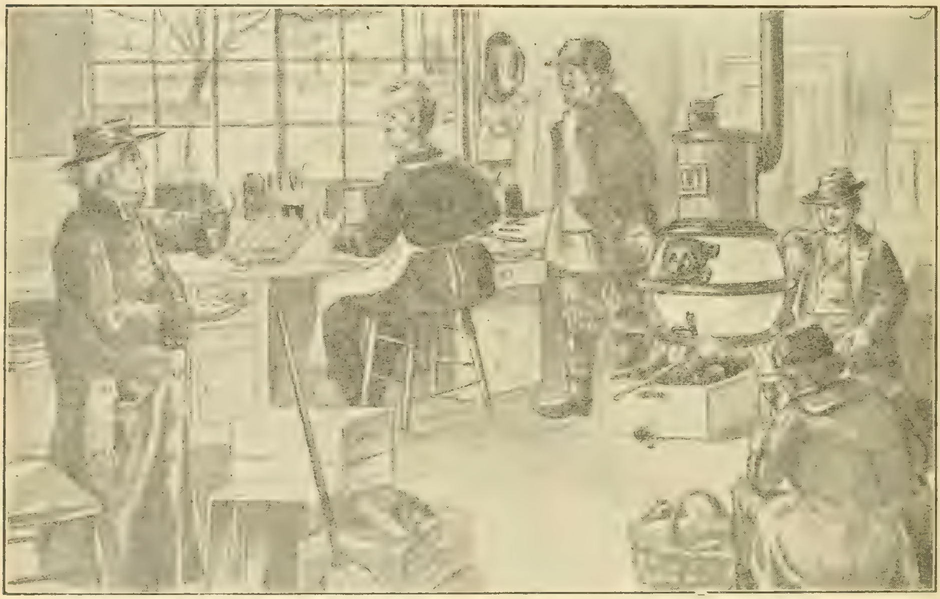
"Begorra! Is that so? I wish I could get hold of one of them 'ere kind of hives, and I would keep bees too. What great heads them patent folks have on them—ha!"

"It may be so," I remarked; "but some of us bee-keepers think it is often more in the season or the management or breed of bees than in the hive."

"I declare!" said Simpson, "there is a good deal to learn about this bee-business, isn't there?"

"Of course, but I haven't told you much yet. There is Hutchinson, who has been advertising queens reared from a queen worth a hundred dollars."

"What! a queen-bee worth a hundred! a hundred dollars? a hundred dollars for just one leetle bee? Why! that would make her worth more than her weight in gold," said Simpson, his eyes beginning to stand out in wonder.



"Yes," said I, "more than her weight in diamonds; but that isn't much. There is Wright, in Western New York, who has a queen he calls Sweetheart that he says he wouldn't sell for two hundred dollars. And there is Mr. McIntyre, away out in California, has a queen, I don't know what he asks for her; but if he could be persuaded to sell I presume it would not be less than three or four hundred dollars. I tell you, 'bugs have riz.'"

"Mighty man! Did you ever? I never heard the like o' that in all my born days! Why! what makes them worth so much?"

"It is just because their stock is so industrious, such good workers."

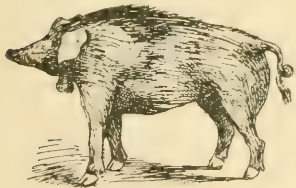
"Well done, now! I supposed all bees were just as industrious as they could be. I have heard my old dad say many a time, 'as busy as a bee,' and I didn't suppose one bee could be more busy than another."

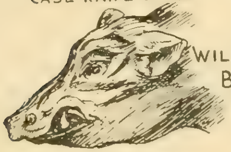
"But for all that, they can," said I. "You see, all animals and plants vary from each other more or less when taken from their wild haunts and domesticated or cultivated. Then by selecting the best for many generations we can improve them. You see how we got our choice grapes which our grandfathers knew nothing about. Mr. Bull took some wild fox-grapes that were fit only for partridges or wild Indians to eat, and planted a lot of seeds in his garden, and then selected seeds from the best fruit and planted again, when, after a while, he raised the Concord, which he named after the town in which he lived. So by raising seedlings, and crossing with better varieties, we now have a good many choice grapes. Then there are our wild plums—but here comes Dan Savage. Good morning, Mr. Savage."

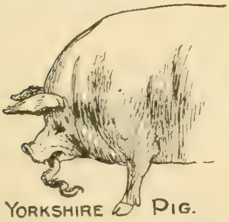
"Good morning. Bees making honey now days, I reckon?"

"Not much," said I. "I don't know how many times I have had that question asked me this winter. It is queer anybody should think of such a thing—as though bees could gather honey when there is not a plant in blossom out of doors within five hundred miles of here, and the snow is two feet deep, and the mercury 10° below zero. But then, you might teach me something about pigs."

"I reckon I could," said Savage. "I have raised enough on 'em; and there is money in the business, too, I reckon, with improved breeds. I can raise corn cheap on my flats, and then with clover and artichokes I am right in it, I reckon. But you want a good breed. There is the case-knife breed. I wouldn't give a cat's commission for the hull on 'em. Old Jenkins has 'em, and I reckon he will lose his farm. I'll bet it 'll go on a mortgage in less than a year."


CASE-KNIFE BREED.


WILD BOAR


YORKSHIRE PIG.

"Yes, I see; I have just been looking this matter up. I am very much interested in improving my bees, and I wanted to see what had been accomplished with other domestic animals. I found a picture of what you call the case-knife breed, from an old work by Richardson, and called by him the Irish grayhound; and two pictures from 'Youatt on the Pig,' showing the head and neck of the wild boar and a Yorkshire pig. You see the difference, the grayhound pig and the Yorkshire pig. Both descended, doubtless, from the same wild stock; but how different! The grayhound had to pick up its living as it could, and bred as it happened, while the Yorkshire pig has been well fed and housed and bred for many generations from carefully selected stock."

"I reckon that is so," said Savage, as he turned and shuffled down the street to look after his herd of squealing brutes, and my more agreeable neighbor Ben Bridgman walked into my shop with a cordial "Hello! how are you?"

"Pretty well. When did you get back from the city?"

"Came in on the morning train."

"Sell your wool?" I asked, for Ben is a wool-grower and a sheep-breeder as well, for about here both seem to go together. But before he had time to answer me I asked another question:

"See here," I said. "I have been wanting to see you for some time to ask you about your flock. You began keeping sheep, if my memory serves me right, some thirty-five years ago. What I wanted to know is, how much wool your flock averaged at that time, and how much now."

"During the civil war," he began, "the price of wool was high, and I increased my flock as fast as I could, and in 1865 I sheared just three hundred sheep, and they averaged me just five pounds of wool a head, which I sold for a dollar a pound. I don't keep so many sheep now—only about two hundred. Last year these averaged me ten pounds a head—just twice what I got thirty-four years ago."

"Good! I don't believe there are many bee-keepers who can make as good a show as that in improving their stock."

I was going to make some more very complimentary remarks when Esquire Fullam came in.

"Good morning, 'squire. I notice by the papers you dairymen have been having a pretty lively convention over at B——."

"Well, that we did," said the 'squire. "You know our dairymen's association is the oldest one of its kind in the United States. We take our wives and daughters along with us, and put up at the best hotels, and have a jolly good time I assure you. Dairying is hard work, but it is honest, and we are all the time improving our stock and our farms—yes, and our children too. Ours is a grand State for dairying. We have the largest creamery in the world, and ——— is the only town in the world that has the proud distinction of sprinkling its streets with buttermilk. I tell you I wouldn't swap our State for any other in the Union. Those York Staters may make more cheese, but I doubt if it is as good."

I noticed he was getting a little short of breath, and, at the risk of being rude, I interrupted him and said, "You spoke of improving your stock. Can you tell me how much you have improved it since your association was formed?"

"Well, let me see," he began. "Thirty years ago we got—that is, the best of us—two hundred pounds of butter to the cow, while now some of us are getting three hundred, and a few have averaged nearly four hundred pounds. I tell you, ours is a great dairying State. We have the purest water in the world, and our high mountain pastures furnish the sweetest feed this side of the Alps; and with modern conveniences we can beat the world making butter, and"—

But just here he was taken with a fit of coughing, and I turned my attention to Will Simpson, who had been sitting on a pile of bran-sacks in mute astonishment.

"You see," said I, "improvement is the watchword with every profession nowadays; and if the bee-keepers don't improve their stock they will get left."

"Geewhittaker! I should say!" exclaimed Simpson. "But what is the use of wasting your time in trying to improve your bees when you can just as well keep bees enough to get all the honey there is, and they will board themselves and work for nothing, as I have heard folks say?"

"Just this," said I. "The flowers within range of my home yard give on an average yearly, say, 10,000 lbs. of honey. Now, if I keep the average run of bees it will take about 100 colonies to gather it, or 100 pounds of honey for each colony. Of this it will take about 70 pounds to keep each colony a year, leaving me only 30 pounds of surplus to the colony, or 3000 pounds from the whole yard. But if I keep stronger and more industrious bees, so that each colony would gather 140 pounds while the other was gathering 100 pounds, it would require but 71 colonies to gather the whole 10,000 lbs.; and as it would not require any more to keep each colony than it does the poorer stock, I should get 5000 lbs. of surplus instead of 3000 lbs. when I had to keep 100 colonies, to say nothing of the smaller number of colonies to care for, or hives to keep in repair. And what is true of my home yard is true to a greater or less extent of any other yards. See?"

"Great granthers and his great horned spoon! What ingenious fellows you bee-folks are! I wouldn't o' thought on it," said Simpson.

"Oh!" said I; "this isn't all, by a long way. Our supply of flowers is getting shorter as our forests are cut down; and unless we are able to gather the annual crop of honey more economically it will hardly pay to carry on the business in many sections; besides, we have got to improve our bees so they will gather the honey from red clover."

"Lawful sakes alive! you will make me go crazy talking about all them queer things. I didn't know there was so much to learn about bees."

A. S. H., Ark.—There is no trouble about keeping bees and chickens together; in fact, it is a common practice. Very small chickens, if the hencoop is placed near a hive of bees, may sometimes be attacked; but there is no use of putting such little chicks so near the hives. Large chickens the bees do not attack —at least it is very seldom that they do.

CONVERSATIONS WITH DOOLITTLE.

EARLY POLLEN AND HONEY.

"Good morning, Mr. Doolittle. It was such a nice morning, this last day of March, I thought I would call over and have a little chat about early bee-forage with you, for our pets will soon be out at work."

"Indeed, Bro. Jones, this is a nice morning, and I hope it may soon warm up enough for bees to have a good flight, at least, for, with the exception of the flight they had about the 10th of February, my bees, which are outdoors, have not had a chance to fly since November 10, 1899. I have often wondered how it is that our bees can stand four to five months of cold weather with only one flight, and sometimes none at all, much of which is from zero to twenty degrees below, while, if they have a few days of zero weather further south, we hear of a great loss of bees. But what was it you had on your mind regarding early forage for the bees?"

"Picking up a paper lately I saw an article regarding early pollen and honey, the writer claiming that such was that which laid the foundation for the bee-keeper's success during the season. This set me to wishing for knowledge regarding the plants and trees which gave this early pollen and honey. So I came over to see you. Can you tell the source from which bees gather pollen first?"

"The first plant producing pollen in this locality is what is known as skunk cabbage. The buds are all formed the season previous in a purple-colored sheath, about the size of a hen's egg; and upon the approach of spring this pushes through the ground, and a small opening is made by the sheath parting on one side so that the bee can crawl in."

"What! You don't mean those red-pointed things that we see standing up two or three inches high, sometimes four or five near each other, down in Smith's lot?"

"Yes, that is just what I mean. Those are the shells, as it were, and inside is a tiny ball about the size of a small marble, with little spikes covered with pollen standing out from it in all directions."

"But how do the bees gather the pollen?" I thought they took wing in packing pollen in their pollen-baskets."

"The bees roll around in this shell and run over the ball, collecting the pollen in their baskets without taking wing, in much the same way they manipulate propolis from an old bee-hive which stands in the sun, till they secure a load, when out they crawl, often having more pollen on their backs than in their pollen-baskets, and away they go for home."

"That explains why my bees are covered all over with yellow dust in early spring, with very little pollen in their pollen-baskets, when they enter the hives. I had thought that they were so covered because they were 'novices' at the business on the start, while later on, after they had learned their trade better, they packed it all snugly in their baskets. But do the bees get honey from skunk cabbage as well as pollen?"

"I saw somewhere, not long ago, the claim made that skunk cabbage produces honey, and one of our bee-papers said a few years ago that it had been several times mentioned as a honey-producing plant; but I think there must be a mistake somewhere, for, after a careful examination during many years, I have never been able to find a bee leaving this plant having any honey in its sac. My observation substantiates what Quinby wrote nearly half a century ago, when he said, in speaking of skunk cabbage, 'These afford only pollen.'"

"Does it grow on all kinds of land?"

"No. It grows only on moist to almost wet soils, or what is termed 'swampy places.'"

"How does it look later on in the season?"

"Soon after blossoming it puts out large cabbage-like leaves which, if broken, smell very much like the animal from which it derives its name."

"Does it blossom about the same time each year?"

"Its time of blossoming is from March 25th to April 20th, according to the earliness or lateness of the season, and is always eagerly sought after by the bees, as it is the first thing from a natural source which gives a chance for gathering."

"Is there nothing else which gives early pollen?"

"Yes, there are the pussy willows, but none of these blossom as early as does the skunk cabbage by about a week to ten days. There are several kinds of these willows which put out their blossoms quite irregularly. Some are a month earlier than others, and some of the buds on the same bush or small trees open nearly a week later than the first."

"How do the flowers look?"

"The flowers are of a rich orange color, and consist of a center out of which spring hundreds of little thread-like filaments, upon which the pollen is supported. It is very interesting to see the bees work on these flowers, as we can see their motions so plainly, for the tree or bush does not grow so high but that some of the lower limbs are about on a level with the eye. By having the bee between the light sky and yourself you can see its motions quite well, even while it is on the wing, as it simply hovers in the air while brushing the pollen into the baskets."

"Where does it grow?"

"Its natural home is about the same as the skunk cabbage; but with a little culture it will readily grow on dry or up land. They grow readily from cuttings put in the ground in early spring, as does all of the willow tribe."

"Does the pussy willow yield any honey?"

"Some claim that they do; but according to Quinby and my own observation they produce no honey. As they grow very plentifully about here I have had much observation regarding them, but never yet was able to find any bee at work on them having honey in its honey-sac."

"But is it not willow which gives the first honey?"

"Yes, but the willows giving honey are different from those giving pollen. The golden willow and the white willow are those which give us our first honey."

"But do not these yield pollen also?"

"Neither of these last-mentioned willows gives any pollen, so far as I can discover, for I never yet found a bee at work on them which had any pollen in its pollen-basket."

"Do the bees work on them much?"

"When these willows are in bloom and the weather is warm, the bees rush out of their hives at early dawn, and work on them all day long as eagerly as they do on clover, basswood, or buckwheat; and the blossoms secrete honey so profusely that it can many times be seen glistening in the morning sun by holding the blossoms between yourself and that orb, and the trees resound with the busy hum of bees from morning till night."

"Do the bees secure much honey to store in their hives?"

"Yes, when the weather is right they often store from ten to fifteen pounds from this source; but the great value of honey from willow lies in its giving honey so early in the season, thus stimulating the bees to early brood-rearing beyond any thing else that could be done. Where we have good weather during this bloom, and then during apple-bloom, our bees will always be in the best shape possible to take advantage of the flow of nectar coming from clover and basswood. Without these, the bees can not be in as good condition for the later flows, and that is why you read about early honey and pollen laying the foundation for success during the season."

"I think I understand now, and shall be more interested in these early-blossoming plants and trees than I ever have been before."

HEADS OF GRAIN FROM DIFFERENT FIELDS

[I solicit questions for this department; but they must be put on separate slips of paper, and marked "GLEANINGS Department." If you desire an immediate answer, say so at the time of writing, and a private reply will be sent you in advance before your question with answer appears in these columns; but questions that are mixed up with business matters will not only be subject to considerable delay, but possibly will receive no answer at all.—EDITOR.]

MORE ABOUT W. L. PORTER, THE BEE-KEEPER OF COLORADO.

Dear Mr. Root:—I wish to thank you personally for the article in the March 15th issue of GLEANINGS regarding Mr. W. L. Porter, of Denver. Mr. Porter was one of my old students; and if there is any thing that makes a teacher's heart leap right up into his throat, and even turn summersaults, it is to hear good things of his old boys and girls. Mr. Porter was one of three brothers who came to the Michigan Agricultural College, and you have not told the best thing about Mr. P., which was equally characteristic of his brothers. I refer to the fact of his excellent Christian character and great big conscience. All three of these boys—John, Will, and Albert—were earnest Christian young men, and never backward in any work which would please the Master. As we should expect, they were also earnest students. I will let Will speak for himself; but the other two, Albert and John, both of whom are now in the other world, were among the best students I ever had. I was glad to see the portraits you gave, and to know that Mr. Porter has such a delightful family. What you say of their hospitality and courtesy hardly need be said to any one who knows Mr. Porter. If there ever is a significant green tinge about my eyes it is when I hear of such visits as you must have had with the Porters in their Colorado home. Albert and John seemed strong boys in Michigan. They were certainly mentally and spiritually strong, and, as we all supposed, were robust physically; but both have gone on to the better world—like Lycidas, gone before their time. I think that, without doubt, had they gone to Colorado or Southern California, they might have remained to bless the world up to a ripe old age. I am very glad and thankful that Will went to Colorado. He was at our California convention a year ago, and aided us not a little in our deliberations.

Right here, Mr. Editor, I do not think you can too strongly urge any of your readers who are threatened with incipient lung trouble to hie away at once to either Southern California or Colorado. Such wise action almost insures restored health, useful work for long life, and blessing to the world. California is to day full of grand men, the like of whom I have rarely seen anywhere, who came here at the beck of such ill health. To-day they are in full strength and vigor, and are in almost all cases a rich blessing to their neighborhoods.

Claremont, Cal., Mar. 24. A. J. COOK.

GREASY SECTIONS.

Dr. Miller, on page 206, kindly asks why a colony of Punics in his yard, working under the same conditions, made greasy sections all through the season, while other colonies made white ones. Now, I will be as frank as he often is, and admit that I don't know. I never had such a colony of bees, and would want them, or any other, under close observation to be able to say any thing worthy of consideration.

I do not pretend to know all about this matter of greasy sections, but have noted what has come under my observation, and intend to continue the investigation as thoroughly as circumstances may permit, so as to know, if possible, whether our good brethren of the bee-keeping fraternity, like our misguided ancestors, who honestly believed in witchcraft, have been committing a very serious offense or not.

I desire at this point, as questions are in order, and as very ripe, heavy honey invariably goes with greasy sections, to ask whether the queen should not have the credit for it. I'm one who believes that bees *manufacture* honey instead of simply gathering nectar, as we are sometimes taught, and I am partial to a queen that produces a strong colony of bees which can *manufacture* thick *waxy* honey. To say that they simply gather nectar is as inaccurate as to say that the dairyman gathers butter and cheese, and it would be most gratifying to me to know just what part the queen plays in this whole business.

A superficial, indifferent observation determines nothing of value in any line of research or investigation; and those who care to get at the truth respecting this matter of greasy or watery capped honey should give the subject the most careful study possible. To this end I desire to say to any who have queens whose bees produce that kind of honey, if they will send such to me for experiment I will note all the conditions as carefully as I can, and report the results when the season is over. W. M. WHITNEY.

Kankakee, Ill., March 28.

GREASY HONEY NOT DUE TO THE QUEEN; A CASE IN POINT ON THE OTHER SIDE.

Dr. McLean, page 170, has solved a problem that puzzled me greatly. The past season we had a considerable quantity of greasy honey, usually mixed with white sections in the same surplus; but one surplus attracted my special attention. The *outside* rows of the sections were capped beautifully white, while those on the *inside* were decidedly greasy. Now, I fail to see how any logic can be applied in this case to prove the queen or *strain* responsible for the grease. Both white and greasy were produced by the same bees, from the same queen, the same season, and in the same surplus-box. It must have been owing to different conditions of weather, as clearly set forth by Dr. McLean.

JOHN T. SILER.

Berkeley Springs, W. Va.

PARTIAL TO PLAIN SECTIONS.

I am very partial to the 4¼×4¼×1½ plain sections and cleated fence separators. I am satisfied in my own mind that, by the use of the two together, the sections are more evenly filled, and present a neater appearance on the market by the side of the old-style beeway sections and tin separators.

Cincinnatus, N. Y. FLOYD SMITH.

ROACHES AND HOW TO GET RID OF THEM.

I should like to know what to do about the young roaches now in three hives I just bought. MRS. ANNIE P. BENNETT.

Patoka, Ill.

[Will some subscriber who knows please answer?—ED.]

I prefer the ideal supers, holding 30 tall sections, to any other I ever used with fences. They are filled and sealed much nicer than the 4¼×4¼, and sell more readily here.

HANS C. CLABERDEBOSH.

Syracuse, N. Y.

EDITORIAL
BY
E. R. ROOT

I WOULD call attention to a valuable article from M. M. Baldridge, in this issue, on how to treat extracting-combs filled with candied honey. Such an article is especially seasonable for this time of year.

I HAVE just returned from attending a convention of the Chicago Bee-keepers' Association—an organization that takes in bee-keepers of the city and immediate vicinity. The convention, while not large in attendance, was an excellent one, and the discussions were of the very best.

AFTER the convention I had a delightful visit with Dr. Miller and his family. In later issues I will tell you something about "go-backs." If you do not know what they are, I will leave you to guess until I can find a little more space to tell you about them. The Miller family are in possession of a valuable little kink which I believe the average bee-keeper does not know about, and which, too, I believe, will be worth hundreds of dollars.

HOW TO BLEACH POLLEN-STAINED SECTIONS; PASTE THIS IN YOUR HAT.

JUST before returning home I hunted up Byron Walker's place, only to find that he was not in. As he had gone out with a load of honey he would not be back till late at night. But I met his man, Mr. R. S. Chapin, of Marion, Mich. He received me very courteously, and when I inquired in regard to Mr. Walker's method of bleaching he very kindly gave me the *modus operandi*.

"Quite accidentally," he explained, "Mr. Walker had placed in the show-window a case of sections, the faces of which were stained yellow. When he came to get them, some days afterward, he found they were bleached out almost white, and that portions of the sections shaded by the case were of the same yellow tint, showing that the sunlight had done the work. This accidental discovery led Mr. Walker to place more sections of the same sort in the window, with the result that these likewise were bleached as the first were."

"But," said I, "can you bleach travel-stained and greasy sections?"

"No," said Mr. Chapin. "Sunlight will have no effect on these whatever. The only sections that we can bleach are those that appear to be pollen-stained or have a yellowish coating over the cappings. These can be bleached so they will sell for No. 1 sections, provided, of course, they are No. 1 in all other respects."

"How long does it take to bleach?" I inquired.

"Anywhere from two to three days," he answered.

Mr. Walker had said that, when he got time, he would write up this matter, adding that sunlight was the agent used. As over a year has elapsed, and he has not found the time, I take it from some things he has written that he will be glad to have me give the method.

This may be a little kink that will be worth hundreds of dollars, as it may save some sections that are otherwise fancy or No. 1 from being put into lower grades. A knowledge of how to make these darker sections fancy and No. 1 white, thus making them sell at the top of the market, may be worth hundreds of dollars to some bee-keepers. So I would advise, "Paste this in your hat."

THE GOOD WORK OF THE UNITED STATES BEE-KEEPERS' ASSOCIATION, NOW THE NATIONAL BEE-KEEPERS' ASSOCIATION.

IT will be remembered that the United States Bee-keepers' Association (now the National Bee-keepers' Association), by the advice and direction of General Manager Secor, assisted by Herman F. Moore and G. W. York, arrested in Chicago certain alleged sellers of glucosed honey for a violation of the Illinois pure-food law. While the suits resulted in the acquittal of the first defendant, it appeared then, and it appears much more so now, that the retail dealers in syrups and certain brands of so-called pure honey were scared all over the city. I learned with a great deal of pleasure that since the Association raised its hand to strike a blow, the amount of glucosed honey on the Chicago market has been cut down very materially, and that which is sold is pretty sure to be labeled "imitation." The newspapers at the time stated that the United States Bee-keepers' Association was back of these suits, and that it did not propose to give up the fight—that the guilty would surely be brought to justice. So, taking every thing into consideration, the effort resulted in a great victory for the Association, although it appeared to be at first a defeat.

I understand, also, that a new law will be in force in Illinois about the first of July, by which it will be the duty of certain food commissioners to make tours of inspection every so often to see whether adulterated goods are being sold in Chicago, and, if so, whether they are labeled "imitation." It appears that the sellers of these spurious goods are already scrambling to close out their "green goods." The suits that were already begun by the Association, and the enactment of the new law, are going a long way to wipe out adulteration in one of the worst centers of adulteration in the United States. Indeed, I should not be surprised if it would stamp it out entirely. In either event, no one will know just how much the Association has contributed to bring about this very desirable result. But that it has certainly done *something* can not be denied. I tell you, brethren, we ought to stand by the Association. Give it your dollars, because it is fighting *your* battles in a way that you can not do single-handed and alone, and I promise you there will be some later developments that will be an eye-opener if nothing else.

By the time the National meets in Chicago, in August, I hope there will not be a pound of adulterated goods to be had in the city.

WHY THE BEST HONEY IN THE WORLD DOES NOT PLEASE THE TASTE OF MANY CONSUMERS.

FROM some things that I pick up from the general correspondence in the office, and from other things that I learned while in attendance at the Chicago convention, it appears that alfalfa honey, which to the notion of many of us is the finest and most delicious in the world, does not sell readily in some of the Eastern markets. And why? Consumers say that it does not have *flavor* enough; that *real* honey has a strong honey taste. But this alfalfa, they think, because it is so mild, is nothing more nor less than sugar syrup, colored slightly, and flavored with some sort of extract. They want none of it, because if extracted or comb honey does not taste like the honey of their fathers, they jump to the conclusion that it is sugar syrup or glucose.

At one time honest bee-keepers and honest honey-salesmen had to contend with the so-called manufactured comb honey—something no one ever saw, but which, forsooth, the newspapers said existed; and now these same honest people are obliged to combat another bugaboo or notion founded on ignorance—that all pure honey should taste exactly alike. Such a delusion is hard to dispel; but it should be met with the right kind of literature, and with the right kind of talking. There are years when there is little or no clover or basswood on the market, like last season, for instance; and the only high-grade honey is alfalfa; and to have this, the very finest honey in the world, called spurious, is most unfortunate.

Some honest salesmen, to satisfy the old craving, put into some of this nice alfalfa some strong flavored buckwheat or fall honey. But all such honeys, to me, taste like an inferior grade. Better put out each grade exactly for what it is; call it alfalfa clover if you will, but never put it under the name of "pure clover honey" in order to make a sale. While alfalfa is a clover, yet the term "pure clover," to the average customer, means neither more nor less than the old-fashioned white clover, which is indeed a very fine honey.

Let us call things by their right names, and go in for a general campaign of education. When white clover or basswood is not to be had, then individually explain to the consumers the fact, and that the alfalfa which we have to offer is pure bees' honey the same as that from clover and basswood. Whenever a salesman is known in any vicinity he will have very little difficulty in doing this.

ALFALFA, OR LUCERNE (MEDICAGO SATIVA).

THIS one of the clovers is very closely related to, and indeed greatly resembles, sweet clover, which latter is described under the head of CLOVER in our A B C book. Alfalfa has, during late years, come to be one of the most important honey-plants of the great West—especially of those arid regions that have to be irrigated. It is grown most extensively in Colorado, Wyoming, Arizona, Nevada, Utah, Kansas, Nebraska, New Mexico, Washington, Oregon, and is now making rapid strides in California.

It has been grown, in an experimental way, in many of the Eastern States; but outside of irrigated regions it is not known to yield any honey. While it makes an excellent forage plant in a few localities in the East, permitting of one or two cuttings, it is grown as a hay particularly in the Western States I have mentioned; for there is no other forage-plant that will yield the same tonnage per acre of fodder or hay in regions that have to be irrigated. It yields anywhere from 3 to 5 tons per acre, and gives from 3 to 5 cuttings to the season, and, under favorable circumstances, it is even claimed that 6 and 7 have been made. For the best hay, it should be cut when the blooming commences; but, unfortunately for the bee-keeper, this also cuts off the supply of nectar when it is flowing at its very best; for alfalfa, when in bloom in the irrigated regions, is perhaps the greatest honey-plant in the world. But notwithstanding the interests of the bee-keeper, the ranchers cut their alfalfa hay just as soon as it begins to bloom, irrespective of the fact that it is "killing the goose that lays the golden egg" for the bee-keeper. After cutting, it is stacked in the open field* in a stack that will run anywhere from 10 to 100 tons in capacity.

As one goes through the irrigated region of Colorado along the line of the Northwestern R. R., in a Pullman car going at the rate of 50 or 60 miles an hour, he sees hundreds and hundreds of such stacks; and where one stack has been cut into, or opened up, he sees not the dull grayish-brown hay of the East, but a beautiful grass-green clover hay; and it seems to keep green, no matter how old it is, provided it is not faded out by the intense sunlight that pours down with such relentless fury on the Great American Desert. But it is only the top layers that are faded. A few inches below, the hay is of the beautiful green color I have described.

The irrigation needed to grow it for forage makes the crop almost certain; and those bee-keepers who are located in the vicinity of alfalfa-growing can rely almost as certainly on a crop of honey, the very finest, richest, thickest in the world. Of all the honey I have ever tasted I know of nothing, not even clover (which has formerly held the first rank), that can equal it. It runs from 12 to 13 lbs. to the gallon, while most eastern honeys run from 11 to 12 lbs. This heaviness of body is due to the dryness of the atmosphere in which it grows; for where alfalfa flourishes at its best, hives made of the best seasoned white pine will shrink and twist and check in a manner that is truly astonishing to a "tenderfoot." A light dry atmosphere a mile above the level of the sea, in the regions of Denver, almost entirely devoid of dews and frosts, a cloudless sky, occasional hot winds, a bright sun that pours down, unobstructed by cloud or mist, causes every thing to dry up, and even honey to thicken—so much so that it is difficult to throw it out of the combs with the best of extractors. Indeed, I found that some bee-keepers are obliged to place their extractors in warm rooms, and even warm the combs sometimes before extracting, so thick is the honey. And then to do any thing like a good job of extracting, one must give the extractor-baskets a high rotative speed, and this necessarily puts a great strain on the wire cloth and the bracing of the extractor.

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*In the irrigated regions it scarcely ever rains, and therefore great barns for the storage of the hay are not necessary.

I have already spoken of the superb quality of alfalfa honey. If every one takes a liking to it as I have done, he will be almost spoiled for eating any other honey. Some of it is so thick and fine that it can be almost chewed like so much delicious wax candy. The flavor is a little like that of white clover, with a slight trace of mint that is very pleasant. In color it is quite equal to it, and in every other way it has no superior.

The nectar from alfalfa is secreted so abundantly during the time it is in bloom that anywhere from 100 to 500 colonies can be supported in a given location. In Colorado, however, it is found more profitable to have apiaries containing no more than from 100 to 150 colonies, owing to the very great overstocking in many of the best localities. Bee-keepers have rushed to this land of gold and golden honey in such numbers that in the great alfalfa-growing regions apiaries are stuck in very closely, from a half to a mile apart, so that it is not now profitable to have more than 100 colonies to the yard. In other localities not so much overstocked, from 200 to 300 colonies can be kept in a single apiary.

For a given acreage there is no plant or tree, unless it is basswood, that will support as many colonies. In several localities in Colorado, within a radius of five miles, there will be anywhere from two to seven thousand colonies, the like of which can not be found anywhere else in the world, probably.

There is scarcely a prettier sight than alfalfa when in bloom. The beautiful bluish or violet tinted flowers present a mass of color that is truly striking to one who has never seen the like of it before; and the fields are measured, not by the acre, but by the square mile. Indeed, I rode through one ranch in a Pullman car, going probably 50 miles an hour, that seemed all of 40 minutes in going through it—not acres, but miles and miles of it as far as the eye could reach on each side of the track; and stacks and stacks of it, aggregating 100 tons to the pile, more than one could count, if he were to try. Imagine, if you please, the effect of seeing such a field all in bloom, and mowing-machines going through it cutting it down. Imagine, too, the happy hum of the bees going to and from these immense fields. Then, truly, is the harvest of the rancher and the bee-keeper.

No time is lost. The rancher is eager to get the whole cut as *soon as possible.* The bee-keeper, on the other hand, hopes that his rancher co-laborer may make as *slow* work as possible; for as the mowing machines go through the field, the bee-keeper sees a gradual decrease in the flow of nectar. At the rate the mowers are progressing he can tell to a day when the hay will all be cut, and when the honey or the nectar will cease to flow. In producing comb honey he supplies his colonies with just enough sections so the bees may fill every one of them at the close of the honey-flow which he knows in advance to a day. When the hay is all cut, then he awaits the new growth, the new bloom, and then, again, there is a scramble for honey on the part of the bee keeper and the bees, and another scramble to get the hay down before it grows to be too old or out of bloom.

Fortunate is that bee-keeper who is located in the vicinity of those alfalfa-fields devoted to the growing of alfalfa *seed;* for all such have the benefit of the entire blooming until the flower fades and the seed-pod takes its place. It is in these regions especially that a large number of colonies per yard can be supported.

Most of the best alfalfa-fields in Colorado have been taken by bee-keepers; and unless one can take a range vacated by another by death or otherwise, or get it by purchase, it is a matter of common honor that the new comer should keep out, notwithstanding there are some who will squeeze in just a few colonies and gradually encroach upon the territory until there is not much in it for any one.

APPEARANCE OF THE ALFALFA.

To a tenderfoot, or one from the East, alfalfa looks a good deal like sweet clover; and when the two plants are young it takes even an expert to detect the difference; but as they grow older the alfalfa assumes more of a heavy bushy character; and the other, sweet clover, takes on more the appearance of a treelike weed.

CULTIVATION OF ALFALFA.

While it seems to grow best in the arid regions watered by irrigation-ditches, it also grows in localities where there is not too much rainfall or the soil is not too wet. It seems to do best on a light sandy soil with a loose or porous subsoil, and the roots run for 4 to 12 feet down—on the average perhaps 5 or 6 feet. The seed may be sown broadcast or in drills about 12 inches apart. The amount per acre varies greatly. Some think that 10 lbs. is sufficient, while others argue in favor of 30 lbs. The average amount seems to be from 15 to 20 lbs. If too small an amount of seed is sown, the plants grow large and coarse; whereas if a larger amount be used, a larger number of plants result in smaller stems and better hay.

Alfalfa is what is called a perennial — that is, it lives on from year to year, and the great difficulty of growing it in the East is to get it to make a stand. If it can be once started it will grow on from year to year with very little trouble.

The average life of the plants under ordinary conditions seems to be about twelve years, although some claim they will live as long as fifty years; but good authorities seem to doubt the statement.

For some of the data just given, and for the half-tone illustrations here shown, I am indebted to Bulletin No. 35, entitled "Alfalfa," from the State Agricultural College, Fort Collins, Col., by Dr. W. P. Headden, Chemist.

OUR HOMES,

BY A. I. ROOT.

Blessed are the poor in spirit, for theirs is the kingdom of heaven.
Blessed are they that mourn, for they shall be comforted.
Blessed are the meek, for they shall inherit the earth.
Blessed are they which do hunger and thirst after righteousness, for they shall be filled.—MATT. 5:3—6.

In a recent sermon our good pastor in his line of talk used an expression something like this: "Jesus while here on earth never said, 'Thou shalt not drink intoxicating liquors;' neither did he say, 'Thou shalt remember the sabbath day to keep it holy.' But he did say, 'Thou shalt love thy neighbor as thyself.'" Jesus taught principles. I can readily imagine that, when he saw the scribes and Pharisees laying down laws that got to be innumerable, as to what man should *not* do, he became disgusted with that sort of worship, and therefore he swept it all aside, giving some general principles, and leaving man's good sense and judgment to decide for himself what he must not do.

After the sermon was over, and I had got to thinking of the matter, the question arose in my mind, "What did Jesus put strongest emphasis on? what did he say first in his ministry?" And then my mind dwelt on Sheldon's life work—what would Jesus do? If Jesus were present here just now, and should see the iniquity, intemperance, and crime on every hand, *how* would he remonstrate? what would he exhort men to do? Suppose great multitudes should gather to hear him speak. He would, without doubt, give some brief, practical general truths that would strike at the root of the whole matter, for no one ever lived who had the gift of putting as much in a few words as Jesus did.

Then the question arose in my mind, when he commenced his ministry and began giving general exhortations to humanity, what did he say first? Thank God, we have it. The beatitudes are so familiar to every man, woman, and child that I fear they have almost become meaningless. We read in the fifth chapter of Matthew, that, when he sat down before the multitudes on the side of the mountain, he opened his mouth and taught them, and here are the words. His first message was, "Blessed are the poor in spirit, for theirs is the kingdom of heaven" The next is much like it; and then he declares the meek shall inherit the earth, and that they which hunger and thirst after righteousness shall be filled. Dear friends, is it not possible this is what the world needs to-day? Is there any thing in the world the people of the United States need more than to beware of pride, arrogance, wealth, and all the injustice that follows along in the line of these things? I think I am really disturbed more just now than I ever have been before in my life, in regard to the state of affairs, not only in our own nation, but all nations. Things are different just now. The people of the whole wide world are getting *in touch* as they never were before. Even the small children know what is going on in Africa, that far-away land that nobody knew much if any thing about when you and I were children. The United States has invaded a foreign land, and demanded that cruelty and oppression shall cease. We became very patriotic when this thing started. We began to point to the stars and stripes, and boasted that America was going to straighten up and *purify*—oh dear me! I am afraid that word "purify" was unfortunate; but after all, I think that is the way people talked and many of us felt. Uncle Samuel made some of those foreigners stop cock-fighting. I do not know but they were a good deal astonished when we declared it was *wicked*. Then Uncle Samuel wound up some other things that sounded big, when we were in the business of sending armed soldiers to relieve oppression. But we soon discovered—at least our *good* people did—that the average American soldier, even in military garb, was not a *bona-fide* missionary. I just saw it stated in the dailies that some military man had, within a few days back, declared no American soldier—that is, within his jurisdiction—should go into any saloon and drink, with his *regimentals* on. May the Lord be praised for this little glimpse of good sense and decency. But I am getting away from my text. You know about these things, even if I do not tell you of them all just now.

Jesus' first words were, "Blessed are the poor in spirit"—those who are not disposed to become cranky and important, even if you *put* them into office. There has been trouble in Manilla and Porto Rico, and there has been trouble in Washington, because those in office have become proud, arrogant, and overbearing. I have sometimes pictured in my mind the attitude of Attorney-General Griggs when he told the temperance people what their temperance law *meant*. Then I have pictured again and again in my own mind the President of the United States when he talked with the women of the Women's Christian Temperance Union, and told them the Griggs decision had *got to stand*. I wonder if our President ever thinks of these beatitudes.

Well, our troubles are not all in the presidential mansion. Every large city is distressed and wearied because the chief of police, judges, and other officials become important and overbearing. But it is not the great cities alone where a hard, bad, and wicked spirit seems to have got in among public officials. I told you a few months ago with what enthusiasm our people in this county were working for good roads. During this good-roads movement the commissioners had quite a little to look after. They were responsible, not only for the way in which the money furnished by the tax-payers was used to build good roads, but, while our people were about it, it was deemed best to put in good substantial iron bridges. Well, the commissioners are now accused of using the people's money more freely than they have any legal right to do. In fact, it has transpired that neither the commissioners nor the other officers at the court-house had any of them read the law, and really knew whether or not they were acting according to law, therefore our county is a good deal in debt, and there are rumors of crookedness. A committee is, however, at work, and we think it will all be straightened out. I am pretty well acquainted with most of the commissioners. Some of them I have known from childhood up. They have been mostly hard-working farmers—good, reliable, honest men—that is, they *used* to be, and I *hope* they are still; but if they ever believed in the little text at the head of this chapter, I am really afraid they have forgotten it. One thing about them troubled me—I mean about their behavior after they got to be commissioners. I have thought a good many times I would not say any thing about it, because it hits so many good people; but how can I hold up a word of warning unless I speak plainly and clearly?

I presume a good many think I make too much of *little* things, or that I *demand* too much of frail humanity; but I hope all these friends whom I may happen to hit in what I say will believe that I speak out with a kindly feeling in my heart, and without narrowness; for I am trying to love all humanity, even as Jesus loved the men and women of the whole wide world.

One day, when it was all bustle and hurry about good roads, I saw one of the commissioners, whom I had known for years, with a cigar in his mouth as he was giving directions. I was greatly astonished, for I had never even heard the man used tobacco before. He must have commenced after he was about sixty years of age. Soon after, another commissioner was put in to fill a vacancy like the first one, and he was a professing Christian besides. In a little time *he* had a cigar while he was riding about the county looking after things. I spoke of it to one old gray-headed veteran in the church—a particular friend of mine, and he replied something like this: "Mr. Root, I have watched this thing almost all my life; and our county commissioners all begin to use tobacco sooner or later when they get into office. I do not know of an exception, unless it is Bro. ——. He *commenced* to smoke; but I went right to him, and protested so earnestly that he admitted I was right, and gave it up."

Now, some of you will say right here, and may be some of my very best friends, "Why, Mr. Root, you must let other men decide questionable matters like these themselves. You yourself enjoy the liberty of regulating your eating or drinking so as to suit your own notions. Are you not getting a little 'off' when you make a fuss about so small a matter as smoking a cigar when perhaps more than half the men you meet right and left use tobacco?"

Dear friends, I have thought of all this; and I would not mind so much about the cigar if I did not feel sure it was an indication of or a stepping-stone, if you choose, to something else. A man with a cigar in his mouth is more apt to be overbearing, and to tell people they know their own business than a man who is not a smoker.[*] Our commissioners, as I have said, are good men—or at least they always have been. Well, nobody questions that they have filled our county with iron bridges when there was no money in the treasury to pay for them, and nobody knows where it is coming from to pay for them; and I believe it is agreed, too, that these bridges were bought from one company, instead of receiving bids from different firms, according to law. The tax-payers remonstrated with them; but the commissioners got a going, and told the tax-payers they knew their own business. Both parties have found out to their sorrow, however, that the commissioners did *not* know their own business. Now for our texts.

Jesus knew what was in humanity. He knew what sort of spirit prompts men to use stimulants, to be proud and overbearing because they were put in office, to become careless and indifferent to the best interests of the people who put them into office. Years ago a good business man (or so he was considered) was given an office in our court-house. Little by little he and his family began to wear fine clothes, and to ride around in a gay equipage. Finally their extravagance went to such great lengths people began to inquire and look into things. It was soon found that this man had been appropriating money belonging to the county, right and left. At first he charged the county for the fine equipage with which he and his wife went to a neighboring city on business for the county. As nobody made any objection he became bolder and bolder, and finally *kept no account at all*—used money as freely, almost, as if he were a millionaire. The poor hard working farmers who signed his bond had to make it good; and about the time the whole thing came out, this man died of apoplexy—perhaps caused by high living that the county paid for.

The Savior did not say, "Blessed are the poor in spirit, even if you put them into office;" but I think it was in his mind. He did not say, "Blessed are the meek, even if they are exposed to great temptation, and have reason to think that nobody is looking after them nor watching them;" but I think it was implied. He did not say, "Blessed are they which do hunger and thirst after righteousness, no matter what inducement or bribes may be offered on every hand to turn them from the straight and narrow path;" but I think his talk included all this; and I do firmly believe that not only the people of this country, but the whole wide world, need *meek* and *lowly* and *humble* people more now than they need wealth, new discoveries, or any thing else. The great cry all the way from the county court-house to the capitol at Washington is for men and women who will not be "puffed up" if you give them an important office where great sums of money shall be intrusted to their care. We want marshals, policemen, judges, senators, who can not be swerved one hair's breadth from what they *know* to be their duty, by all the machinery and wealth belonging to the brewers and liquor-trusts. What the *whole world* needs is the spirit of Christ Jesus and his teachings in the hearts of all men. In that first sermon on the mount, the Master seemed to think it is more important that he should warn us against pride, and against being puffed up by responsibility, more than any thing else. And is it not as true to-day as it was in olden times? Intemperance, crime, and all other sins and evils, would vanish if people *believed* the few words of these little simple beatitudes.

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[*] After the above was in print I read it over again, and it occurs to me that many good people who have used cigars all their lives (or pretty much all) may misunderstand me. Let me try again. Suppose a young man with Christian parents, or say a minister's son, who has all his life carefully avoided not only cigars but stimulants of every sort. Now suppose this young man all at once get into the tobacco habit: it indicates, at least in his case, that he is breaking away from his former habits, former teachings, and, I guess I may truthfully say, from his former associates. It means much more in his case, because a boy with such a training, when he gets started, goes down pretty fast. Well, the same thing is to a certain extent true with a middle-age man. If he has worked hard all his life, and kept clear of these things because of the expense of such habits, if nothing more, when he gets in with a new crowd, and starts to puff a cigar, it is usually the outward indication of a letting-down of principles within his heart. O my friends, you need not argue the case. When we have a candidate for office, and you can truthfully say, "Why, this man has the very best of habits; he never drinks, and does not even use tobacco in any form," the whole wide world admits that such a statement is in the man's favor. The very men who sell liquors and tobacco subscribe to what I have been saying. A young minister once provided himself with some cigars, and went out and mixed in with some of his congregation who were smoking in the horse-sheds at noon time. He expected to win their favor by showing that *he* could smoke *too*; but he was sadly disappointed. He actually *lowered* himself in their estimation as well as in his own.

WHY DOES A YOUNG BEE DANCE WHEN IT GETS HOME WITH ITS FIRST LOAD OF POLLEN?

Dr. Miller and Ernest both gave their explanation on p. 251, April 1, but I think they miss the main point. The young bee dances about for just the same reason the little child dances out in the twilight. It is its way of showing its thanksgiving and praise and gratitude to the great Father above for having given it a place in this world of ours. The dog and the cat, and all domestic animals, have their special fashion of indicating that they are happy and grateful to the great God who gave them their life and being. I have watched these young bees for hours (just as I am watching flowers nowadays in the greenhouse), and I am sure I am not mistaken. Sometimes when they are tumbling about in this sort of fashion they get in the way of some of the old veterans. The ragged-winged workers do not seem to share in their enthusiasm, and probably do not see any thing to make such a fuss about. But this young bee has just had, may be, its first flight away out in the outside world. Just think of the contrast compared to the close hive where it has spent all its life. It has been out in the sunshine amid the flowers, perhaps buzzing from one soft-maple blossom to another. Why, it would be funny if it did *not* feel like dancing when it gets home with its load of luscious food so handsomely padded on each little thigh. To be sure, it is important news to indicate; but, besides all that, I am sure it is its way of praising God for the wonders that even a *bee* can comprehend in this beautiful and wonderful world of ours.

HEALTH NOTES

BY A. I. ROOT

SOMETHING FAVORING THE VEGETARIAN DIET, AND A LITTLE CONCESSION TO THE BATTLE CREEK PEOPLE.

Some of you may remember that I said some time ago I would give a thousand dollars for any sort of treatment or medicine that would enable me to eat fruits and vegetables as other people do, or as I did when a boy. Well, I have not yet reached that desideratum, but I am making progress along that line. Perhaps a year ago, in the *Good Health* magazine published at Battle Creek, Dr. Kellogg advised people who could not eat fruit, to try a meal of fruit only, eating nothing else whatever; and he declared that even a dyspeptic could assimilate the fruit under such circumstances. I first tried baked apples and bread and butter for breakfast. I got along very well, but it was not quite a success. I tried again, making my *entire* breakfast of baked apples—not even a crumb of bread. To my great surprise I felt very well indeed all the forenoon. I did not feel any more faint and used up at dinner time than usual—perhaps not as much. I tried the same thing with apple sauce, but it did not answer. Then I considered that the sauce was sweetened, and the baked apples were not. So Mrs. Root began making apple sauce especially for me, without any sugar; and for several months I have been rejoicing in a good dish of sauce three times a day. But I find I must not eat sugar or sweets of any kind if I want the apple sauce to "behave itself."

After many tests, my firm conviction is that sugar, or the excessive use of sugar, is at the bottom of most of the indigestion in our land. My good friend, if you are troubled with headaches or sour stomach, cut off sugar (especially sugar in tea and coffee) and see if you do not get the benefit.

Now I have something better yet to tell you. For years past, along in the afternoon, say three or four o'clock, I get exhausted, mentally and bodily, so that I am almost unfit for any thing; in fact, I have oftentimes counted the minutes until our five-o'clock supper time. A cup of malted milk refreshes and revives me, but I do not get really braced up until my evening meal. I have tried having my dinner of pure lean meat, and tried eating a larger quantity, so that my strength might hold out; but the larger quantity of food, I found, worked the other way. Some time in January, when we were gathering our first Grand Rapids lettuce, I decided to try a good dish of lettuce well moistened with good *cider vinegar*. To my surprise, it did not seem to disturb my digestion. Soon after, I ate some more lettuce and vinegar, and took a dish of baked beans, and forgot all about it. When the whistle blew at five o'clock I was over in the greenhouse, and was greatly astonished, for I had not even thought of supper time—no headache, no faintness; in fact, I did not care particularly about *any* supper. Mrs. Root suggested it only *happened* so; so I tried baked beans and cider vinegar next day, eating no meat, mind you, and nothing with the beans but a little dry bread. I am more rejoiced than you can think, to tell you that there has been no failure. After a few days, with improved health I found my chills disappearing; and I got along very well without my overcoat, even when the weather was down to 20 or 25—no more sitting over the radiators or putting my feet in the oven.

I have avoided the use of vinegar for years, thinking it *produced* indigestion; but now I find that, taken with beans at least, it *aids* digestion. The weather is not yet suitable for riding a wheel; but when I take my next wheelrides I am going to carry along a lunch of baked beans and good cider vinegar. I recognize, dear friends, that what is one man's meat is another man's poison, but I have given this because I feel assured others may be greatly benefited by the suggestions I have thrown out. May the Lord be praised that I am daily gaining in strength without any animal food, for at least one meal during the day. The diet mentioned does not answer so well for the *last* meal of the day. It is a diet that needs exercise after it; therefore I am having beefsteak for my last meal, with a piece of dry bread.

In connection with this matter a valuable suggestion from one of our womenfolks in regard to preparing beans for food will be found interesting. We have tried it, and I, at least, am very much pleased with the plan.

Mr. A. I. Root:—Having had GLEANINGS in our family for years, and thereby learned that you believe in wholesome living, I have thought that you might be interested in a method I have originated of cooking dry beans which removes the skins and germs. No one seeing the tough skins which have been removed would want to eat beans again with the skins left on. By this method old beans cook as easily as fresh ones.

Pour one quart of beans into two quarts of boiling water on the stove; add two level tablespoonfuls of baking soda. Stir them so that all will heat alike, for about ten minutes, or until the skins are loosened enough to slip off easily when pressed between thumb and finger. Drain the soda water out through a colander, and put the beans into a dish-pan containing cold water. Rub them between the hands until the skins are removed from the beans. Then stir them up, and the skins, rising to the top, can be poured off before they settle. Add more water, and stir and pour off the skins several times till all are removed from the pan. The germs will settle to the bottom, and remain after the beans are dipped out. Then put the beans into 1½ quarts of water; salt to taste, and cook about an hour. If desired, meat can be cooked with them, though we omit the meat, and usually sift them through a colander when done. Add cream, and bake in oven, though this is not necessary.

Farina, Ill., Mar. 21. MRS. T. P. ANDREWS.

Mr. A. I. Root:—I have been quite interested in your talk on tobacco. I want to tell you that it is 21 years to-day since I quit using the vile weed. I used to smoke ¼ lb. every 24 hours. I will never backslide.

Dryden, Oregon, Mar. 22. JOHN MCKEON.

ROBBING SICK PEOPLE.

OXYGENOR KING, OXYDONOR, ELECTROPOISE, ETC.

Mr. A. I. Root:—As former editor and proprietor of the *Northwest Horticulturist*, I have frequently read and admired your GLEANINGS for its terse homely truthfulness, and am surprised to see any criticism emanate from you regarding Oxygenor or Oxydonor. I am an agent of the Oxygenor because I have seen with my own eyes cures effected by the instrument, and it seemed to me to be indeed a Godsend to the afflicted. In my own family, cures of neuralgic and catarrhal affections and inflammatory attacks have been made. I am now about well of an attack of lumbago, which was treated solely by this instrument. That it cures diseases there is no doubt. I shall never forget the first instrument I sold, an Oxydonor, to an aged gentleman of this city, for use by his son on the verge of death, given up by the physicians—in fact, a son who had for many years been dissipated and dissolute. The Christian father was anxious to keep the son alive until he could be induced to confess Christ. The doctors gave him 24 hours to live. The Oxydonor kept him alive 4 months, during which time he confessed Christ, and his aged father and mother, pleased beyond expression, died shortly after. The father, a personal friend of mine, said that the instrument had been beyond value to them in having thus prolonged the life of his son.

Here is another case of a party, as shown in the inclosed circular, who paid nearly $5000 in treatment for stomach troubles, without a cure, and was cured in three months' treatment by a $15 Oxygenor. Which was the fraud in this case—the Oxygenor or the physicians and druggists who had failed to do for nearly $5000 what the Oxygenor accomplished at a cost of $15? I doubt whether you have made a thorough investigation, or a practical one, to arrive at the decision you seem to hold. Have you referred to the U. S. Health Reports as per citation, and found the quotation not there? W. H. BOOTHROYD.

Tacoma, Wash., Mar. 26.

Our friend, in his concluding sentence, refers to government indorsement, and I copy the following from the circular he incloses:

STRONG GOVERNMENT INDORSEMENT.

The Oxygenor is strongly indorsed by the United States Secret Service Bureau, on page 8, No. 8, Vol. XXIV. of United States Health Reports. With other statements are the following: "In this treatment will be found the only positive cure for all chronic diseases of men and women, such as nervous debility, female weakness, nervous prostration, loss of memory, weak back, insomnia, rheumatism, malaria, piles, lung, liver, stomach, bladder, and kidney troubles." "The Oxygenor is so simple, so perfect, and so complete, as to be a means of self-cure in the hands of every intelligent person." "This investigation was made without the knowledge of the Oxygenor Co."

I am exceedingly glad to get that government indorsement, and it has already been forwarded to Washington with the plea to have this thing dealt with as the postal authorities have dealt with Francis Truth.

Let me briefly answer Mr. Boothroyd, and everybody else who feels inclined to defend this senseless trap. No doubt our friend is honest—at least I hope he is—in telling what he has seen with his own eyes. I am glad to know that people got well; but judging from former experience I fear I shall fail in making him believe the senseless rigging had nothing to do with the recovery. The same remarks that I made in our issue for March 15, p. 230, about water-witching, will apply to this. It is not along in the line of scientific investigation at all, and would not stand honest scrutiny a single instant. There is no "oxygen" and no sense or science about it *anywhere.* In regard to the testimonials and wonderful cures, Francis Truth had the biggest testimonials of anybody. The greater part of them were humbugs and frauds; but, sadder still, many of them were from people who imagined they had been cured. Oxydonor was an imitation of Electropoise, and this new Oxygenor is an imitation of the Oxydonor—fraud infringing on fraud. The principal reason why I publish this letter is because these things from the start made their capital by a shameful pretense of Christianity and godliness. The letter tells in detail how the Oxygenor not only saves the body, but they make a pretense to the effect that it *saved a soul*. The advertising has been done principally through religious papers, and ministers of the gospel have helped to push it, even recommending it to members of their own church. A man whose education is not sufficient to enable him to detect a bare-faced fraud like this should never be editor of *any* paper, and certainly not a minister in any parish. I have quoted again and again the decision of the United States Chemist, but they tell me the chemist is not up to the times. Why don't these fellows prosecute me for slander? They have threatened it many times. Because the proprietors know very well what the result would be if the humbug trap were taken before the courts. I hardly need assure our readers that the government never indorses any medicine or trap, much less a fraud like this; and the whole quoted sentence of the government indorsement is an ingeniously gotten-up fraud and humbug. It is hard to believe that Mr. Boothroyd *himself* thinks it is genuine.

Just as I finished the last sentence the following hearty indorsement from our good friend Cook, of Claremont, Cal., was handed me. I wonder if the Electropoise folks will say Prof. Cook is not up with the times in new discoveries.

> I was especially glad to read what you said on the "water-witch." I am surprised that any one should be humbugged by these water-witch men. Yet I find in Southern California not a few of our most intelligent men giving heed and often big money to these men of the willow wand. In Southern California there is a great reservoir of water under nearly all our valleys, and it does not take a very wise water-witch to predict rightly the presence of water. I myself have taken a stick a number of times, though without the least of faith, and in every case the wand refused to turn. We had a fine institute at Redlands last year. It was a farmers' club institute, and so we had delegates from all parts of Southern California. There was present in the audience one Jonathan Biggs, who was bold enough to assert that he could always tell of the presence of water and the depth required to reach it. He said he could even tell if the water was in a tub under the floor. During recess a tub of water was placed under the floor of the audience room. Mr. Biggs made an utter failure in trying to find it. One would naturally suppose that this would have been embarrassing, yet most men who deal in such matters know no embarrassment. So it was that Mr. Biggs, although receiving the ridicule of all present, was himself entirely unabashed.
>
> I was especially glad to see your editorial on this matter, because there is an immense amount of this fraud being perpetrated upon our people, and a goodly number of our most intelligent citizens give it full credence, else how could we explain the "Christian Science" and faith-cure craze? We see the same incredulity suggested in the millions of dollars paid each year in advertising patent medicines. I think it is safe to say that the great majority of these nostrums are not only valueless but positively harmful. Dr. Oliver Wendell Holmes knew what he was talking about when he said, "If all the medicine of the world"—mind you he did not say *patent* medicine—"were thrown into the sea it would be a blessing to the people; but," he added humorously, "it would be awful on the fish."
>
> Among the other good things that you have done as an editor has been your most commendable effort to expose these humbugs. When we notice that many of our cultured college-bred men are misled by such frauds, it certainly shows that the time is ripe for just such editorials as you are so frequently penning against these pernicious misrepresentations.
>
> Claremont, Cal. A. J. COOK.

The *Scientific American*, in a recent issue, while commenting on the fact that the directors of the Paris Exposition invite water-witches to come and make an exhibit, winds up with the following:

> The whole business is akin to that of fortune-teller, the spiritualist, or any other charlatan, and it is strange that the exponents of such systems are allowed to pursue openly their avocations undisturbed by fear of prosecution. At present the victims are the only ones punished.

It is refreshing indeed to have such an authority as the above back me up in what I have been trying to teach.

DEATH OF J. W. WINDER, OF NEW ORLEANS.

The veteran readers of GLEANINGS will remember, without doubt, friend Winder. About the time father Langstroth got out his first honey-extractor, Gray & Winder made a revolving-frame extractor, which was mentioned on page 57. Mr. Winder was originally a photographer. He soon became an enthusiastic bee-keeper, attended all the conventions for years, was one of the first to rear queens and advertise them; and to the day of his death he made bees and honey his principal occupation. He died April 8, aged 71 years. I have mentioned Mr. Winder in my visits to New Orleans, and the courteous way in which he gave his entire time to piloting me around through the different portions of the city. He held his health remarkably. Even when nearly 70 years old he would walk a dozen miles a day, and almost without fatigue. We are informed by his son, A. T. Winder, of Alpine, Texas, that bronchitis was the cause of his death. One more of the old veterans has passed away.

HIGH PRESSURE GARDENING BY A. I. ROOT.

MORE ABOUT GROWING AND SHIPPING GRAND RAPIDS LETTUCE; POTTING-EARTH, OR POTTING-SOIL.

The standard formula of the newspapers is leaf-mold mixed with various other things too numerous to mention—different mixtures for different plants. In practice, very few people get the leaf-mold. The various mixtures I think just as unnecessary for the ordinary flower and vegetable plants as are the many brands of fertilizers for different crops. They simply mistify and confuse amateurs; experts smile, perhaps audibly, at them, and each goes his own way.

Our practice, which we find to answer very well, is, one-third rotted sods, one-third rotted manure, one-third coarse sharp sand.

We usually plow as much headland as necessary, to give us what sod we need for the year, early in the summer, and pile them in alternate layers with fresh or rotted horse manure, whichever is handier. With us it usually is manure from mushroom-beds, of which we generally have a quantity, and which is highly prized by us for any fertilizing purposes. Watering the heap, if it gets too dry, and turning a couple of times, brings it to good condition by fall. It is then shoveled and pounded through a six-foot screen, one-inch mesh, and mixed with sharp lake or washed sand, and carted to the potting-shed for use in winter, by which time it is further rotted, and is put through a half-inch sieve, swinging from the roof, which leaves it very nice, and uniform in texture. This earth, sterilized by steam, is very satisfactory.

The lath boxes, spoken of in GLEANINGS, page 186, are made 15 inches long, four laths on the bottom and two on each side (laths split in two are too light in our experience); end, half-inch pine, 5 in. long, 2½ wide or deep. This allows the sides to come about ¼-inch below the bottom, which gives drainage when watered in the water-bench.

This makes a very convenient box to handle with one hand, or six or eight of them can be carried on a tray. They are very nice, also, for plants for a retail trade, as a purchaser does not have to come for cabbage, onion, and celery plants, and again for tomato, and plants that must be set out later, but can take them home and keep them as well as we can until time to set them.

A good hand will dig his own seedling plants, and plant 150 boxes a day of lettuce, cabbage, and like plants, spaced 32 to a box; celery, 55, would take longer; tomatoes, 12, would take less. For spacing-boards, see photo.

INTERIOR OF GRAND RAPIDS LETTUCE-HOUSE, SHOWING PACKING-BOX, METHODS OF PACKING, ETC.

PREPARING AND PACKING FOR MARKET.

One of the best hits we have made is the package we were fortunate enough to get up several years ago, and which has proved entirely satisfactory. Barrels were used before we commenced using the box of which the accompanying view gives a very good idea, and were a constant source of annoyance. Grand Rapids lettuce will settle much more than head lettuce. The package was too large for many customers, and, when turned end over end by careless expressmen, the lettuce was much broken up and chafed against the side of the barrel, lowering the quality considerably. Barrels were never returned; boxes are supposed to be, and, in fact, do come back free of charge, on an average six times before they disappear.

The plain stenciling of the name of a grower, and contents of the box, on the neat package, is the best possible advertisement in the stores, markets, or on sidewalks, and, in fact, everywhere, when a considerable business is done.

The boxes are made of ⅜-inch spruce, ¾ inch ends, 30 inches long, outside; 15 inches wide outside; 9 inches deep inside measure, lined with paper 24x50 put in crosswise of the box, which leaves plenty to fold over the top of the lettuce when the box is full. Two other pieces, 14x20, line each end and fold over the same; another of the same size, with any advertisement or notice, is laid in on top as well.

The cover has a cleat at each end, with nails driven through and bent, which hook on to cleats on the ends of the box, holding the cover on securely, yet it can be put on or removed in a moment. So many dishonest customers are using them to sell other lettuce and other goods out of as "Maplehurst grown," and, in fact, many goods that we do not grow at all, that, in self-defense, we have made arrangements to trademark all boxes and lining paper, which will, we hope, put a stop to the practice.

PACKING GRAND RAPIDS LETTUCE.

I suppose each man has his favorite way. Ours is as follows: One man brings the empties all lined, ready; removes the boxes as filled; shuts down the covers and addresses the boxes, which is done by fastening a card with the name of the consignee printed on it with rubber stamp; one tack through the middle fastens the card securely in a scarf about ⅓ inch deep, made in the top of the cover at one end. This prevents the cards being knocked off when boxes are piled one on top of another, as would be the case if the card were nailed on the top of the box.

The packer sits on a low stool at the side of the box. One man on each side of him pulls the lettuce by catching the root between the thumb and first finger, palm of the hand upward; pulls it toward him; as he lifts it, disengages it from the rest of the lettuce; with a stick, a lath from an old plant-box usually, knocks the dirt from the roots, removes any wilted bottom-leaves, and hands it to the packer, who gives the roots a swish in a pail of water which he has between his feet, and places it in the box 8 in a row, roots lapping in the center, 3 layers making 4 dozen, which fills the box fairly in the winter, and with "scripture measure" in the spring.

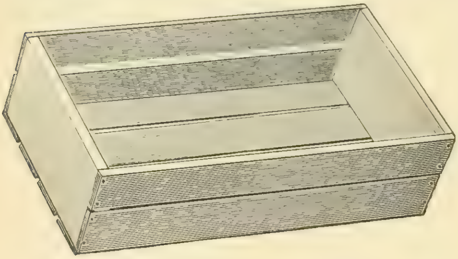
Any plants considered by packers too small for firsts are dropped behind him and packed, eight dozen in a box, and labeled "culls." Culls usually are snapped up at 20 cts. a box less than firsts by a certain class of trade. This gives the best trade, who seldom see any of the culls, an idea that you grow good stuff only, and stiffens prices a good deal.

These directions may seem rather unnecessary; but if you have much *well-grown* Grand Rapids lettuce to pack in a hurry you will soon find out where they come in Well-grown lettuce is very brittle, and must be handled as carefully as eggs

We are not "lightning operators," like the Coggshall brothers, but our record is three minutes to a box for three hours. Four minutes is the regular thing, as careful sorting and handling are necessary, and one lives longer by not hurrying *too* much.

Waterloo, P. Q. THOS. SLACK.

I am sure the above will be read with interest by thousands of gardeners and greenhouse men who do not grow Grand Rapids lettuce. In regard to potting-soil, I believe friend Slack is about right, and I think our largest greenhouse men have only one kind of potting-soil for all their work, or nearly all of it. Ours is chiefly jadoo, especially of late; but as there is quite a saving by mixing it with sand or ordinary potting-soil, we shall keep a supply on hand made as friend Slack directs. For seedlings, and filling the little boxes, I would have half or more jadoo, as it holds water so much better, and it is away ahead for growing any kind of seedlings, so far as my experience goes. You can afford to pay the extra price, I think, in order to grow our Grand Rapids lettuce seed in pure jadoo, or pretty nearly pure. I presume friend Slack has never tried it, as he does not mention it. The box he describes is longer and narrower than the one we use. I have had an engraving made of our own, so our readers can see just how it is put together. See the dimensions on page 186, March 1. Since using them I have concluded a shallower box would be better; and the suggestion of having the ends narrower so the lath goes down below the bottom is, I think, a very good one.



PLANT-BOX MADE OF LATH.

For our work in the greenhouse, the split laths are quite heavy enough; but as we always have a lot of remnants in our saw-room —enough to make all the boxes we need—we make them of that material. Basswood is stouter than the lath, even if made thinner. We find these boxes very convenient for handling thumb pots, and, in fact, potted plants of all sizes smaller than 3 inches. When the pots need water we dip the whole box in water. Where it is desirable to keep the water off from the foliage a lot of plants can be watered very quickly and very thoroughly. One of our boxes holds 12 two inch pots; a larger number of thumb pots, but a smaller number of 2 or 3 inch pots.

Since the above article was sent us, friend Slack is inquiring for some extra select stock seed of Grand Rapids lettuce. He says he will pay a dollar an ounce (and I will do the same) for "pedigree" seed if that is the proper name for it. But before making a purchase I suggest that we have a sample, say a little pinch, to try in the greenhouse. A hundred seeds ought to tell if it is what we want. We can be making tests now; and when another winter comes we shall have some seed that is just right. If any of our readers have some seed they are willing to submit to the test, let us hear from them. If they have not, let some expert go to work and furnish it. Bro. Slack is proposing to grow his own seed, as he wants *the best* to start with.

GROWING VEGETABLE-PLANTS FOR SALE, ETC.

My experience during the winter with the forcing-bed has taught me some useful lessons. During the month of April, when we have cold winds and sometimes cold *drying* winds, we have had much trouble with our vegetable-plants before they were hardened off so as to stand both wind and sun. When a plant is first starting it should be surrounded by a damp *still* atmosphere of the proper temperature. The sash is all right to protect it from frost, and to allow the sun to warm up the soil and air underneath the sash. But an April sun, in the middle of the day, is too hot for any thing under glass. The books tell us to tilt the sash or move it part way off when it gets too hot inside; but this lets the sun pour down just the same, and dries out the air, so that the plants, especially newly transplanted ones, are sure to wilt. If you pull the sash off entirely when the wind is in the north you will lose more or less of them. Taking them up with some of the soil adhering to the roots, when transplanting, helps the matter. But we have a new plan that will grow plants without any roots at all, if need be. In fact, we make our hot-bed or cold-frame into a cutting-bed.

The plan is very simple. Have your bed tight, and have your sash tight and close Just as soon as it begins to get too hot inside of the bed, instead of ventilating, cover the sash with cotton cloth. In order to prevent the wind from blowing off the cloth, have a pole fastened at both the north and south sides, like the plan for using cloth-covered frames in the tomato-book. Let the cloth be wide enough to lap clear over the sash on each side. For this purpose we want cotton sheeting made 2¼ yards wide, or what is called nine-fourths. The strip of cloth should be as long as your bed. We have them of different lengths. One is 50 feet long. When you have severe freezing nights, let the sheet rest over the glass as an additional protection from frost. As soon as the sun strikes the bed in the morning, roll up one of the poles so the sun may have a full chance on all the glass.

Whenever it gets so hot inside that the plants show a tendency to wilt, then *unroll* your cloth sheet, and the plants will have plenty of light but not too much heat. By three or four o'clock in the afternoon you can roll up the sheet again. Follow this up without moving the sash at all until your plants are well rooted and stand up straight. Now give air gradually, but do not let them wilt, and do not let the wind "whip" them. When you have a still cloudy day, and the air is warm enough, take off both cloth and sash; and by all means give them the benefit of an April shower when a shower comes, and the weather is not too cold. By this method you save almost all the trouble of watering. If the plants are well watered when they are put in the bed they will have water enough until they are past the danger period. It really rejoices my heart to see hundreds and thousands of beautiful plants without a failure. As one can easily roll up a strip of sheeting 50 feet (or as much more as you choose, almost), the labor of handling the cloth is nothing compared with that of handling sashes. One man can attend to a large number of beds, without any assistance.

THAT LITTLE GREENHOUSE.

I can not take space to tell all about my new plants, but I must mention one or two. In looking over the list of cuttings of Mr. S. W. Pike (St. Charles, Ill.) I noticed he has pelargoniums, rooted cuttings, at 50 cents a dozen, or $3.00 per 100. Now, I never saw a pelargonium until within the last few days, that I remember; but I ordered one-fourth dozen to see what they are like. While Frank was putting them in the little thumb pots I was talking with some ladies. Pretty soon he held up before me a little plant in a thumb pot, not more than two inches high, with two little blossoms on it; and these blossoms were to me about the most exquisite productions of the floral kingdom I ever saw. The plant looks something like a geranium; but the blossoms resemble a sweet pea, except that the pencilings and tints are more delicate and entrancing (I do not know any other word that tells it so well) than any other flower I know of. I carried it all around the neighborhood, and then as I was not yet ready to go back to the greenhouse I set it on my desk in the office. A good many busy cares oppressed me that day. Some things had to be hunted up and investigated. But again and again I would turn around suddenly and catch a glimpse of that little plant, and, oh what an uplift it gave me! It was like bright sunshine coming through the dark clouds. Then I would have the same story over again. I would get down into business, and forget all about the plant, and then my eye would strike it unexpectedly. If it could speak I imagine it would have said something like this: "Here I am, Mr. Root. God sent me to lighten your cares and to cheer you up. Oh! I am not a myth. I have been in this world longer than you have; and I have delighted hundreds and thousands of people, and, I hope, made them better men and women. I have been near you many times during your life, but you would not look at me, nor notice such a little bit of flower, until my Maker touched your heart; and now I am glad to have you notice me, and introduce me to your friends. Just give me a little of the right kind of care and I will show you yet greater wonders."

The pelargonium is, if I am correct, one of the geranium family; and then there are ever so many different pelargoniums. The one that delighted my heart so much is called the "Bride." I wrote to friend Pike right off, and ordered 25 more just like it. I told him to send them all with buds or blossoms on, and charge accordingly. By the way, we have several other varieties that are not yet in bloom. Perhaps some of them may be equal to the Bride; but as yet I can hardly believe it. If I could just carry this little plant around and show it to all of the readers of GLEANINGS who love flowers, it would be the most fun of any thing I know of in the world. The whole 25 plants are now in the greenhouse, and I think half of them are in bloom. One little plant that I have not had a week yet has on it seven beautiful blossoms and ever so many more buds. A friend told me they are such persistent bloomers that if the buds are not picked off they will blossom themselves to death. Now, there may be a prettier plant in the world than the pelargonium; but just now I feel as old Izaak Walton did when he said, "Doubtless God might have made a better berry than the strawberry, but doubtless he never did."

THE SOY BEAN; A SUBSTITUTE FOR CLOVER.

The Ohio Experiment Station has been for several years past making quite a few experiments on soy beans, even to the extent of several acres, and they just announce in a press bulletin, "As a crop to turn under for green manuring, we do not know its equal." Now, friends, this is an important matter to all those who are bringing up their soil by turning under green crops. Below we give the bulletin entire.

> The soy (or soja) bean is an upright, stiff-stemmed, branching bean, introduced a few years ago from Japan, which is rapidly coming to the front as a most valuable forage-plant. It has been grown for several years by the Ohio Experiment Station with very satisfactory results. Planted on some of our poorest soils, it has produced two to three tons of excellent dry forage or hay per acre, which is eaten with relish by all kinds of stock. As a crop to turn under for green manuring we do not know its equal.
>
> As the soy bean is a warm-weather plant it should not be planted before the last of May in Northern Ohio, nor before the middle in the southern part of the State. When planted for forage it is sown at the rate of a bushel and a half to the acre, on well-prepared land, sowing with the wheat-drill with all the runs open. Thus sown it soon covers the ground, and there is no trouble from weeds or foxtail. It should be harvested before frost, and cured as hay.
>
> The soy bean, like clover, adds nitrogen to the soil, and it is therefore a renovating instead of an exhausting crop. It is especially suited to take the place of clover in a systematic rotation where the clover has been killed out by severe winters, as is the case at present over a large part of Ohio, or where the spring seeding of clover has failed to catch. The Ohio Experiment Station has used it in such cases with such good results that it feels justified in urging the farmers of the State to give it a careful trial.
>
> There are several varieties of soy beans, some of which will mature seed in Ohio, while others will not. As a rule, the latter class are more valuable for forage, as they make larger growth. The beans, however, which are produced at the rate of ten to twenty bushels per acre, are a valuable feeding stuff, as they are quite high in protein, and to some extent take the place of such materials as linseed meal in the ration. The Kansas Experiment Station has fed them to fattening hogs with the result of effecting a large saving in the quantity of food required to make a pound of

pork, and others report similar results in feeding them to sheep.

The Experiment Station has no seed of these beans for distribution, but it may be procured of most of the principal seedsmen.—*Press Bulletin No. 206 of the Ohio Agricultural Experiment Station. Wooster, Ohio, Apr. 16, 1900.*

DAMAGE TO WHEAT, ETC., BY FROST.

As we go to press, much complaint is made of wheat being killed by the heavy freezes in the fore part of this month. Somewhat to my surprise I find my own wheat almost unharmed. It stands as does our crimson clover, bright and green, and firmly rooted, and the only explanation I can give is that the underdrained ground, fertilized by plowing under green crops (with a heavy coating of manure years past, to help to get the ground into good condition) has enabled both wheat and clover to get so well rooted that even severe freezes at night, with hot sun during the day, do practically no injury.

CONTRIBUTION TO THE INDIA SUFFERERS.

Although I did not expect contributions for the starving people of India, as we go to press the following have sent in the money to me, to be forwarded as I think best:

L. R. Hillard, Canova, S. Dak., $1.00.
G. R. Noren, Waverly, Ia., $5 00.
Jos. Miller, Archibald, O., $15.00.
J. R. Hillin, Salt Lake City, Utah, $12 00.

Friend Hillin says with the above remittance, "It was collected among workingmen."

Now, while I think it would get to our starving friends quicker by sending it to Frank H. Wiggin, 14 Beacon St., Boston, Mass. (the address I gave in our last issue), you can, any of you, send it to me if you wish. I will try to get it off within 24 hours.

Just as we go to press we find the following in the *Practical Farmer:*

> Governor Stanley, of Kansas, has given his endorsement to Rev. Charles M. Sheldon's proposal to send a million bushels of Kansas corn to the starving people of India.

May God be praised for such men as Sheldon, and for such a governor to back him, and for such a State as Kansas. And why not? If they continue to keep out the saloons they can send off to their starving brethren a million bushels of corn, and do it *easily.* Yes, and here is something else about a single *county* in Kansas:

> Governor Stanley, of Kansas, in speaking of the prosperity of that State, said recently that in Finley County there is but one pauper, yet the county has a poor farm which cost $23,000, and is now maintained for the single inmate.

THE NATURAL-HEN INCUBATOR, ETC.

Mr. Root:—About the hen incubator you speak of, I have used the same thing, only larger, quite successfully for ten or more years. Where I could get no sitters only from nests where several laid, I could use them, and the biddy would proceed right to business.

Henrietta, Mich., Apr. 3. E. HOLLING.

We are very glad indeed, friend H., to know that the arrangement does certainly succeed, but you tell us it is an old idea. Perhaps Mr. Seims has, however, made some improvements that make it more practicable. If so, let him give us a reasonable-sized book on the subject, instead of a single sheet of paper for the dollar, and GLEANINGS will give the book a big advertisement free of charge. By the way, our friends who have read the "New Egg-Farm" have perhaps noticed that Stoddard recommends a similar arrangement, only rather more complicated. Stoddard uses a natural hen, but he gives her abundant room and plenty of exercise. But Stoddard's *whole book* does not cost even a dollar, to the readers of GLEANINGS.

The *Practical Farmer*, of Philadelphia gives in its issue for Feb. 14 a drawing and description of the natural-hen incubator. Instead of asking each person to pay a dollar for the information, they give it to all their subscribers free of charge.

Special Notices by A. I. Root.

We are still sending samples of jadoo fiber free of charge. Just say on a postal, "Send me a sample of jadoo," and you will not need to write any more unless you wish to. If you put in some stamps for postage you will get more jadoo, that is all.

PLANT-BOXES, SUCH AS ARE FIGURED ON PAGE 320.

We can furnish these little boxes in the flat, ready to nail, nails included, for $2.00 per 100. The slats are made mostly of white basswood, which gives the box a very clean and pretty appearance, especially when new. Boxes nailed up will be 5 cents each, or 40 cents for 10.

SOJA OR SOY BEANS.

Perhaps I may mention that we have furnished our Ohio Experiment Station with most of the seed beans they have used—see page 321, and we can still furnish these at the following prices: Quart, 10 cts. (by mail, 15 cents extra); peck, 60 cts.; bushel, $2.00. For two or more bushels shipped from Richmond, Va., we can make a special price of $1.60 per bushel. The freight from Richmond to your place can be ascertained very nearly by your local freight agent. We can furnish a leaflet on application in regard to these beans.

SWEET POTATOES FOR PLANTING.

We can furnish Nansemond or Jersey Yellow sweet potatoes, specially for growing plants, at 10 cts. per lb.; peck, 50 cts.; bushel, $1.50; barrel, $3.00. Also two varieties of the Vineless sweet potatoes, namely, bunch yam and General Grant. These latter will be a half more than the Jersey Yellow. If wanted by mail, add 8 cts. per lb. for postage. We mention this in order that the friends may, when ordering Irish potatoes, have a few sweet potatoes included with the shipment if they wish. The little book, "Forty Years with Sweet Potatoes," to every one who buys 50 cents' worth or more, or sent postpaid for 10 cents.

SEED POTATOES.

At present writing we have a supply of nearly every thing in our list, with the exception of Burpee's Extra Early. We were sold out on the Early Ohio, Triumph, and Bovee, but have found some excellent stock grown by a professional potato-seed grower in Michigan. In consequence of the cold March and April, at least up to the middle part of April, our potatoes have kept so far almost without sprouting, and we hope to have clean unsprouted seed clear up to the middle of June by opening up our cellar cool nights and closing it whenever it is warm, keeping out light during the middle of the day. As the cellar is lighted by electric lights we can do this quite readily. Our Sir Walter Raleighs at $2.50 per barrel I should consider a bargain, even for table use; and we have quite a few seconds at only $1 25 per barrel. Many of these are, in size and shape, firsts, but are put among the seconds because they are just a little scabby. These are certainly a bargain for table use; or if treated with corrosive sublimate they are probably just as good to plant as the firsts. Better send on your orders quick, if you want them. We still have a good supply, also, of the Monroe Seedlings, seconds, at $1.25 per barrel. The other *seconds* are all sold except Mills' Prize, Carman No. 1, and Manum's Enormous.

THE NEW RUSSET POTATO.

You will see by our new price list that the price of this new potato has been reduced from $3.50 to $2.50. They are worth this money for table use in most localities, as they are one of the best table potatoes I know of, and, so far as my experience goes, they come the nearest to being a scab-proof potato of any I have ever grown. The reduction in price is because we have a large stock on hand, and they do not seem to move off as rapidly as we had expected. They are all choice firsts, no seconds, and are, at the present writing, free from sprouting. Besides all the above, they are almost equal as a yielder to any potato I know of.

ANSWERING KIND LETTERS.

Dear friends, I am deeply grateful, and thank God ever so many times every day, for the exceedingly kind letters that are coming continually, and I greatly regret that it is utterly impossible for me to reply to each and every writer as I should like to do. My correspondence would prevent my getting into that little greenhouse at all if I should try to write even a brief personal letter to each one of you. And I regret, also, to tell you that it is entirely out of the question for me to undertake to send cuttings of my favorite plants, as I should like to do. Our two friends, Pike and Danley (see page 279, last issue), make a business of furnishing every thing at exceedingly low prices. They can send you cuttings by mail, of all plants I describe or mention.

WIDE AWAKE WOMEN everywhere are furnishing their homes without money by distributing a few of our fine soaps, perfumes, extracts and toilet preparations, among their friends and neighbors.

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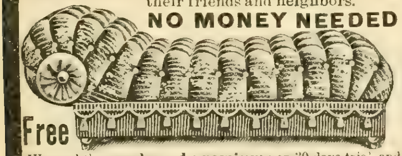

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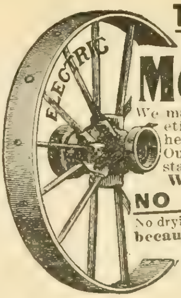

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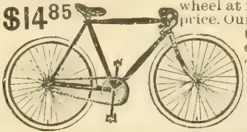

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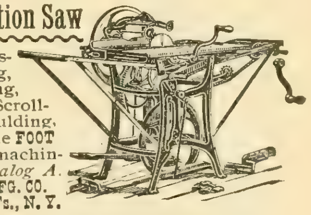

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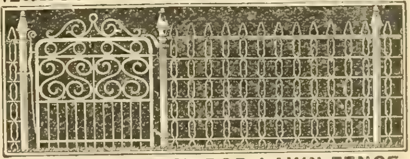

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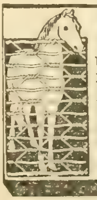

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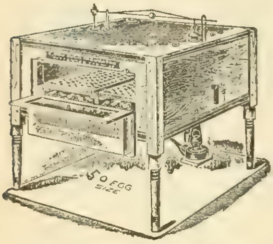

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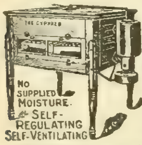
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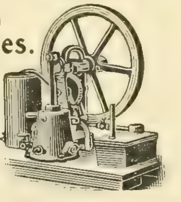

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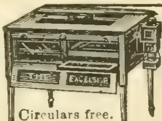

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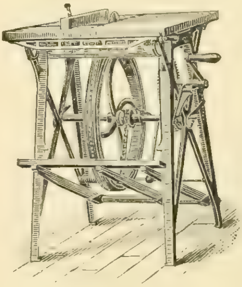

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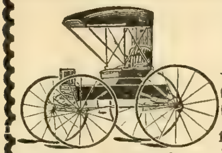

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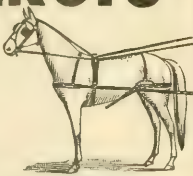

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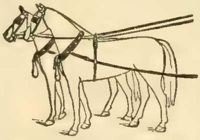

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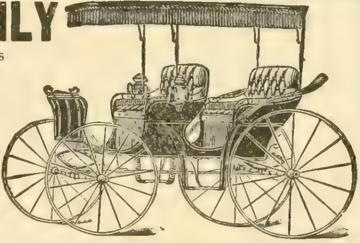

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We Ship Direct to the consumer **At Lowest Wholesale Prices** the most reliable line of vehicles, etc. to be found anywhere. Built substantially of honest material—workmanship the best—one of them will outlast two of the ordinary kind—**Guaranteed** as represented or your money back. We will ship C.O.D. with privilege of examination. You risk nothing. Reliable Top Buggy, **$34.00;** fine spring Wagon, **$39.00;** strong two horse Farm Wagon, **$44.00;** handsome Surrey, **$54.00;** well made Portland Cutter, **$17.25;** Carts, **$9.50** up. Single harness **$4.50;** Farm harness. **$12.95.** Send for free illustrated catalogue.

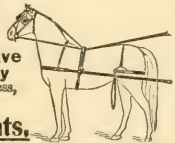
CASH BUYERS' UNION, 158 W. VanBuren St., B-345, Chicago

In writing, mention Gleanings.

WHY

Can we Save You Money

on a vehicle, harness, fly net or saddle?



Because we have no agents.

Can we really do it? **We say yes. Can we prove it** without cost to you? We can. **How?** We will ship you a harness, saddle, or vehicle, without you sending a single cent, and let you look it over at your freight house and if you don't find we have given you the **biggest bargain** you ever saw or heard of, return the goods to us at our expense. **We give with each vehicle a 2-year iron-clad guarantee, protecting you from poor material and workmanship. Our vehicle** catalogue describes the largest line of **buggies, road wagons, phaetons surries, spring wagons and carts, harness fly nets and saddles** ever shown in one book. **It's free. Send for it.**

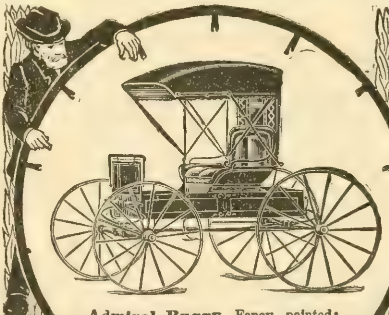
Marvin Smith Co. 55-59 N. Jeffersoh St. U-92, Chicago, Ill.

In writing, mention Gleanings.

Nuclei For Sale.

One frame, bees, brood, and queen, $1.75. Two frames, $2.50. Three frames, $3.00. Discount on larger lots. All queens from imported mothers. I will also sell full colonies on L. frames.

FRANK L. ATEN, Round Rock, Texas.



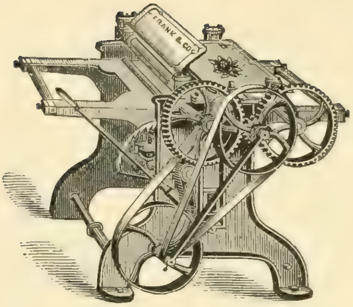
Admiral Buggy—Fancy painted; fancy trimmed with shafts. **Price, $50.** Dealers would charge $75.

We Sell Vehicles and Harness at Less Than Wholesale Prices.

On the above buggy the saving to the purchasers in the neighborhood of $25. The quality is all right in every particular. To assure you of this **we will ship this buggy anywhere subject to your examination and approval.** If not right and satisfactory you return it at our expense. We have a most complete line of **Carriages, Surreys, Traps, Phaetons, Spring Wagons** etc., and all kinds of **single and double harness.** Send today for free illustrated catalogue from which to make your selection.

Kalamazoo Carriage & Harness Co.,
Box 22 Kalamazoo, Mich.

In writing advertisers, mention GLEANINGS.



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The above cut shows one of our small Planers, of which we make twelve different styles and sizes. Also large Planers, Band Saws, Buzz Planers, Moulders, Wood Lathes, and all kinds of

WOOD WORKING MACHINERY

Send for Catalogue.

The FRANK MACHINERY CO.

BUFFALO, N. Y.

In writing, mention Gleanings.

Adel Bees Did it.

San Louis, Colorado, March 2, 1900.

Last spring (1899) I ordered queens from 5 different queen-breeders, and among them one from you. The bees from your (Adel) queen gathered more honey than the others all put together.

(Signed) S. N. SMITH, M. D.

SEND FOR PRICE-LIST.

HENRY ALLEY, Wenham, Mass.

Queens.

Use No Smoke. **It is not necessary** with the **Sweetheart** strain of bees. A postal card or letter will bring my descriptive circular and price list of these **gentle hustlers** and other strains. I am booking orders for them now, which will be filled in the order received. Don't delay.

A. J. WRIGHT,
Bradford, Steuben Co., N. Y.

IMPROVE YOUR BEES

by buying some of Hyde's improved strains of either golden Italians, three-band Italians, or Holy Lands. We know what good queens mean hence breed for honey, gentleness, etc. Send for 20-page circular of valuable information for the honey-producer. We do not rear poor queens, and do not compete with cheap breeders. Our prices, either race your choice: Untested, before June 1, $1.00; 6 for $5 00. Tested, $1.50. After June 1, untested, 75c; 6 for $4 25. Tested, $1.25. Discount for quantities. Breeding-queens a specialty.

N. B.—For every $10.00 sent us for queens, we will, during August or September, mail one select tested queen, or for every $25.00 one fine breeder.

O. P. HYDE & SON, Hutto, Texas.

For Sale **Cheap.** Thirty 1-story Root chaff hives complete, for extracted honey, with supers; 30 large Alley drone-traps; 20 nucleus hives, 3-frame; 25 supers for comb honey; no disease; in good repair.

W. E. PETERMAN,
Royersford, Montgomery Co., Pa.

D. COOLEY,

Dealer in **BEE-KEEPERS' SUPPLIES,**

KENDALL, MICH.

Root's Goods at Root's Prices. Catalog free.

You Can Buy

Groceries and Bee=Supplies at Wholesale Prices

by ordering in wholesale quantities of VICKERY BROS., Evansville, Ind.

They carry an immense stock of sugar, coffee, teas, canned goods, soap, candles, provisions, flour, oil, garden and field seeds, nails, fence-wire, wooden and willow ware, grocers' sundries, bee-hives, sections, foundation, comb, and general bee-keepers' supplies; buy and sell honey and beeswax.

ADDRESS

Vickery Bros., Evansville, Ind.

OPPOSITE POSTOFFICE.

DITTMER'S FOUNDATION!

AT WHOLESALE AND RETAIL.

This foundation is made by an absolutely non-dipping process, thereby producing a perfectly clear and pliable foundation that retains the odor and color of beeswax, and is free from dirt. Working wax into foundation for cash, a specialty. Beeswax wanted. A full line of supplies at the very lowest prices, and in any quantity. Best quality and prompt shipment. Send for large illustrated catalog.

GUS DITTMER, : : : AUGUSTA, WIS.

WESTERN BEE-KEEPERS

will save money and freights by buying supplies from

BARTELDES & CO., Denver, Colo.

20-page illustrated price list now ready.

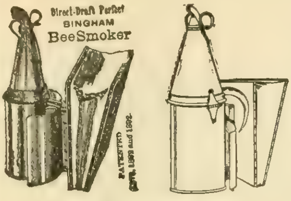
Root's Goods in Kansas.

Carl F. Buck, Augusta, Butler County, Kansas.

ROOT'S : BEE : SUPPLIES

for Maryland, Delaware, Virginia.

Rawlings Implement Co., - Baltimore, Md.



BINGHAM SMOKER.

BINGHAM & HETHERINGTON UNCAPPING-KNIFE.

MADE TO ORDER.

Bingham Brass Smokers

Made of sheet brass, which does not rust or burn out; should last a lifetime. You need one, but they cost 25 cts. more than tin of the same size. The little open cut shows our brass hinge put on the three larger sizes. No wonder Bingham's 4-inch smoke-engine goes without puffing, and does not drop inky drops. The perforated steel fire-grate has 381 holes to air the fuel and support the fire.

Heavy tin smoke engine, 4-inch stove per mail, $1.50; 3½-inch, $1.10; 3-inch, $1.00; 2½-inch, 90c; 2-inch, 65c. Bingham smokers are the originals, and have all the improvements, and have been the standard of excellence for 22 years. Only three larger ones brass.

T. F. Bingham, : : Farwell, Mich.

1881 **PAGE & LYON MFG. CO.** 1900

We manufacture a full line of the latest BEE-SUPPLIES.

Our motto is, "Perfect Goods and Prompt Shipment."

Send for our new free illustrated catalog.

PAGE & LYON MFG. CO., New London, Wisconsin.

Marshfield Manufacturing Company.

Our specialty is making SECTIONS, and they are the best in the market. Wisconsin basswood is the right kind for them. We have a full line of **BEE-SUPPLIES.** Write for free illustrated catalog and price list.

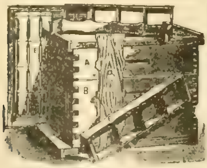
Marshfield Mfg. Co., Marshfield, Wis.

NOW READY!

64-page Catalog of Every Thing Bee-keepers Need.

Illustrated and fully described. Especially valuable to beginners for the information it contains. Send your address on a postal and get it NOW. Established 1884.

J. M. Jenkins, Wetumpka, Alabama.



HONEY MONEY results from the best care of the bees. That results from the use of the best Apiary appliances. **THE DOVE-TAILED HIVE** shown here is one of special merit. Equipped with **Super Brood chamber, section holder, scalloped wood separator** and **flat cover.** We make and carry in stock a full line of **bee supplies.** Can supply every want. Illustrated catalogue **FREE**

INTERSTATE MANFG. CO., Box 12, HUDSON, WIS.

OVERHOLT CORN-SALVE. Sure cure. Directions. —Apply at night by spreading thick upon a piece of linen. Repeat next night if necessary. Soak foot in warm water, and corn will fall out. Good also for bunions. Price 15c prepaid. **A. M. Overholt, Medina, O.**

Albino Queens. If you want the most prolific queens; if you want the gentlest bees; if you want the best honey-gatherers you ever saw, try my Albinos. Untested queens, $1.00; tested, $1.50.

J. D. GIVENS, Lisbon, Texas.

FOR SALE.—25 Colonies Bees at $3.00; also a number of 8-frame L. and Heddon hives with combs; one Novice extractor, and a quantity of foundation.

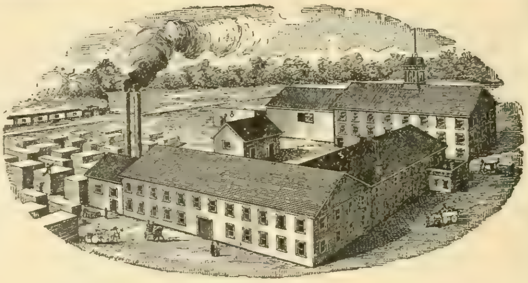
F. R. DAVENPORT,
Box 66. Comstock, Kalamazoo Co., Mich.

FOR SALE. An apiary of 50 colonies in Root's eight-frame D. C. hives, and all necessary supplies for tending the same. The hives are all in good condition. For prices, address **C. A. WHALING, Joy, Wayne Co., N. Y.**

BEE-SUPPLIES!

We have the best-equipped factory in the West. Capacity, one carload a day; and carry the largest stock and greatest variety of every thing needed in the apiary, assuring BEST goods at the LOWEST prices, and prompt shipment. We want every bee-keeper to have our FREE ILLUSTRATED CATALOG, and read description of Alternating Hives, Ferguson Supers, etc. *Write at once for a catalog.*

We also manufacture TANKS of either wood or galvanized steel, all sizes, any form, and for all purposes. Price list free.



KRETCHMER MFG. CO., Red Oak, Iowa.

Comb Foundation!

We manufacture comb foundation from bright yellow beeswax, and no one undersells us. Let us know how much you expect to use, and we will quote you a price. You will save money.

BEE-HIVES.

Of several sizes, fitted with any style section wanted, and kept in stock, ready for prompt shipment. Silk-faced veils, 35c postpaid. Untested Italian queen, 75c. Catalog of supplies free.

I. J. Stringham, {Apiaries at Glen Cove, L. I.} **105 Park Place, N. Y.**

$10.00 REWARD

To the party who sends me the most money for bees and queens between April 1 and Nov. 1, 1900. My 1900 untested queens ready to go

BY RETURN MAIL.

High-grade stock and not cut prices, my specialty.

1 untested queen, $1.00; 6 for $5.00; 12 for $9.00.
1 tested queen, $1.50; 6 for $8.00; 12 for $15.00.
Breeders, very best, $3.00 to $5.00.

Nuclei ready April 15. I have special express rates on bees.

One 1-frame nucleus, no queen, $1.00; 6 for $5.50; 12 for $10.00.

One 1-frame nucleus and queen, $1.75; 6 for $9.00; 12 for $17.00.

1, 2, 3, and 4 frame nuclei, 65c per frame to above prices for extra frames wanted.

For each dozen queens or nuclei ordered at above rates I will mail in August a **SELECT TESTED QUEEN.**

Just received, a carload of Root's goods, which I am selling at Root's prices plus carload-rate freight.

Bees, Honey, and Beeswax bought and sold.

W. O. VICTOR,
Wharton, Texas.

Don't Buy

Supplies

Until you see my 40th annual catalog. A full line of hives and fixtures best adapted to our New England climate. Also best brands of **Comb Foundation and Section-boxes.** I have also made arrangements to keep quite a general stock of

A. I. Root Co.'s Goods at Their Prices.

Parties desiring these goods can get them of me, and **Save Freight Charges.** Bees, Queens, and Nucleus Colonies from the **very best strains** in America. A 40-page illustrated catalog free. Address

W. W. Cary,
Lyonsville, Mass.

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Honey Column.

CITY MARKETS.

BUFFALO.—Fancy, 15@16; A No. 1, 14@15. No. 1, 13@14; No. 2, 12@13; No. 3, 11@12; dark, 9@10. Extracted, 5½@7½. White honey in good demand; mixed and dark, slow sale. Beeswax, 27@30.
April 18. W. C. TOWNSEND, Buffalo, N. Y.

ALBANY.—Nothing new to report in honey market, there still being some call for comb, and none on hand. Extracted is dull. Beeswax steady.
McDOUGAL & Co.,
Successors to Chas. McCulloch & Co.,
April 19. Albany, N. Y.

CHICAGO.—The market is well cleared of white comb honey; a little choice has sold recently at 16, but dark and mixed goods are slow of sale. Extracted white, 8@9; amber, 7@8; dark, 6@7, according to quality and package. Beeswax in good demand at 28.
R. A. BURNETT & Co.,
April 19. 163 S. Water St., Chicago, Ill.

BOSTON.—We beg to report our honey as very quiet, and, although stocks on hand are very light, they are fully equal to the demand since the high prices prevailing have had a tendency to check consumption. The nominal market is 18 cts. for fancy white, yet these prices would be shaded if purchasers evince disposition to buy. No. 1, 14@16; extracted, 8½ for fancy white. No beeswax on hand.
BLAKE, SCOTT & LEE,
April 16. 33 Commercial St., Boston, Mass.

CINCINNATI.—There is very little life in the honey market just now. A very noticeable feature is the decline in price on extracted caused by the appearance of all kinds of foreign honey. San Domingo, Porto Rico, Jamaica, and Mexican honey is being offered at prices below our native product. Here is food for thought for some of our protectionists. I offer extracted white, 7½@8; amber and southern, 6¾@7. Comb honey is well cleaned up. Beeswax, 25.
C. H. W. WEBER,
Successor to Chas. F. Muth & Son,
April 19. 2146-48 Central Ave., Cincinnati, O.

COLUMBUS.—No honey now in jobbers' hands in the market. A limited quantity would do well
EVANS & TURNER,
April 21. Fourth and Town Sts., Columbus, O.

KANSAS CITY.—We quote fancy white comb, 15; No. 1, 14; fancy amber, 14; No. 2 white and amber, 13. Extracted, white, 8; amber, 7. Beeswax, 22@25.
C. C. CLEMONS & Co.,
April 20. Kansas City, Mo.

DETROIT.—Fancy white comb, 15@16; No. 1, 14@15; amber and dark, 10@11. Very little desirable honey in sight, and the demand is light. Extracted white, 7@7½; amber and dark, 5@6. Beeswax, 26@27.
Apr. 23. M. H. HUNT & SON, Bell Branch, Mich.

NEW YORK.—Our market, both clover and buckwheat comb honey, is now bare. Demand has about ceased, with occasional calls for white clover. Prices could be obtained in a small way as follows: Fancy white, 1-℔. section, 16@17; No. 1 white, 1-℔ section, 15@16; amber and mixed, 10@13; buckwheat, 9@11. Demand for extracted honey is very slow, with prices not so firm. White clover, 7½@8; light amber, 7@7½; amber and buckwheat, 5½@6. Beeswax firm, but not in good demand, 27@28. CHAS. ISRAEL & BRO.,
April 20. Cor. Canal and Watts Sts., New York.

WANTED.—To buy honey. Should like to hear from parties having extracted honey to offer, and their best price, delivered at Cincinnati. I pay cash on delivery.
C. H. W. WEBER,
Suc. to C. F. Muth & Son, Cincinnati, Ohio.

WANTED.—Comb and extracted honey. State price, kind, and quantity. R. A. BURNETT & Co.,
163 South Water St., Chicago, Ill.

SPECIAL NOTICES BY BUSINESS MANAGER

BEESWAX DECLINED.

The market on beeswax is much easier, and at least a cent a pound lower than it was several weeks ago; and until further notice we will pay 25 cents cash, or 27 in trade, delivered here for average wax. This is one cent a pound less than we have been paying.

NO. 2 SECTIONS.

Last year we had difficulty in furnishing as many No. 2 sections as we had orders for, while this year the demand for No. 2 has been lighter in proportion to that for No. 1 grade, so that we have an over-supply of No. 2 in almost all widths and styles. These are practically as good as No. 1 grade, except in color, and the price of No. 2 this year is about the same as last year's price of No. 1. We have upward of a million sections in stock of No. 2 grade, and about one and a half million of No. 1 grade. If we have a honey crop a little later you will be able to get such sections as you may need, on short notice.

BUSINESS AT THIS DATE.

As we go to press we are loading the last carload for which we have an order entered, and less than carload orders are filled just as soon as received. During the months of March and April we have shipped thirteen less full carloads than we shipped in the same time last year—a falling off of about one-third, and the orders for smaller lots have been correspondingly less. We have been obliged to reduce our working force considerably, and shall have to reduce it still more unless the fine weather which has finally set in brings a good supply of orders to keep us busy. Judging from reports received, the light trade in supplies is general, and primarily due to the heavy losses in bees a year ago, followed by a poor honey crop which left many empty hives and unused supplies in the hands of bee-keepers. If in need of any thing in our line send in your orders, remembering that we are in position to serve you with unusual promptness.

Sharpless Cream Separators—Profitable Dairying.

Florida Queens.

NOW READY FOR DELIVERY. They are **healthy, prolific, industrious, and gentle.**

Laying Queens at $1.00, or $10.00 per dozen.
Virgin " 75 cts., 7.00 " "

JNO. L. MARVIN, Jacksonville, Fla.

Special Notices by A. I. Root.

WANTED, SWEET CLOVER SEED.

If you have any, either hulled or unhulled, mail us sample and tell us how much you have, and what you want for it. We need some at once, as we are sold entirely out.

OUR A B C BOOK ON POTATO CULTURE.

If you have not got it already, we think it will pay any one who grows even half an acre of potatoes to have the book, especially as it now contains an appendix in regard to potato-growing on the Isle of Jersey. This treats of the new method of keeping the seed potatoes, even in July, if you wish, without the aid of cold storage or any thing that every farmer has not got. The price of the book is 40 cts.; with other goods, by freight or express, only 35 cts.

SEED POTATOES AS PREMIUMS, MAY 1.

A barrel of potatoes (seconds) as a premium for one new subscriber.

At present writing our potatoes are in excellent order, scarcely sprouted at all, because of the cool nights that have permitted us to keep our cellar at a low temperature. We are not entirely sold out of any thing except Bovee, Burpee's Extra Early, and New Queen. But we have also, besides those mentioned in the table, Poor Man's Friend (Blue Victor), and Adirondack. The Adirondack is very much like Mills' Prize. The price of both of these will be the same as Mills' Prize in the table. We have all together about 500 bushels left. Seconds will be half price where we have them. At present writing we have no seconds of any account except Manum's Enormous, Sir Walter, Monroe Seedling, Carman No. 1, Poor Man's Friend, Mills' Prize, and Adirondack. Now, to close out this lot of 500 bushels, every one who sends us $1.00 for GLEANINGS may select 50 cents' worth of seed potatoes from the list; and every one who sends us $1.00 to send GLEANINGS into some new home or new locality, where it has not been going, may have $1.00 worth of potatoes; thus you can make some one a present of GLEANINGS for one year, and have $1.00 worth of potatoes for a premium. Please notice we pay no transportation; and if potatoes are wanted by mail, you must furnish the postage-stamps. In regard to planting late, *our* potatoes will be mostly planted during June, and some of them up into July, and we have had many years of experience in planting both early and late. We rarely fail in getting a good crop when our potatoes are put in July 1.

Now, before you order a barrel of potatoes sent a long distance, say to Texas, Maine, or California, find out from your station agent how much the freight will be. When potatoes are shipped, whoever orders them must pay the freight.

NAME. Varieties are in order as regards time of maturing; earliest first, next earliest second, and so on.	1 lb. by mail.	3 lbs. by mail.	½ peck.	Peck.	½ bushel.	Bushel.	Barrel—11 pk.
Red Bliss Triumph	$ 25	$ 50	$ 30	$ 50	$ 85	$ 1 50	$ 3 50
Bovee	25	50	30	50	85	1 50	3 50
Lee's Favorite	18	40	20	35	60	1 00	2 50
E. Thoro'bred, Maule's	18	40	20	35	60	1 00	2 50
Early Ohio	25	50	30	50	85	1 50	3 50
Burpee's Extra Early	25	50					
Freeman	18	40	25	40	75	1 25	3 00
New Queen	18	40	20	35	60	1 00	2 50
Maule's Commercial	25	50	30	50	85	1 50	3 50
Mill's Prize	15	35	20	25	40	75	2 00
Carman No. 1	18	40	20	35	60	1 00	2 50
Carman No. 3	18	40	20	35	60	1 00	2 50
Sir Walter Raleigh	18	40	20	35	60	1 00	2 50
New Russet	18	40	20	35	60	1 00	2 50
Manum's Enormous	18	40	25	40	75	1 25	3 00
New Craig	18	40	25	40	75	1 25	3 00

FACTS About Bees.

REVISED EDITION.
How to get
GILT-EDGED HONEY
Send 2c stamp to
THE A. I. ROOT CO., Medina, Ohio,
or F. Danzenbaker,
Box 66, Washington, D. C.

WHERE TO LOCATE?

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TRAVERSED BY THE . . .

Louisville & Nashville
RAILROAD,
THE
Great Central Southern Trunkline,
IN
KENTUCKY, TENNESSEE, ALABAMA, MISSISSIPPI, FLORIDA,
WHERE

Farmers, Fruit-growers,
Stock-raisers, Manufacturers,
Investors, Speculators,
and Money Lenders

will find the greatest chances in the United States to make "big money" by reason of the abundance and cheapness of

Land and Farms,
Timber and Stone,
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Labor--Everything!

Free sites, financial assistance, and freedom from taxation, for the manufacturer.

Land and farms at $1.00 per acre and upwards, and 500,000 acres in West Florida that can be taken gratis under U. S. homestead laws.

Stockraising in the Gulf Coast District will make enormous profits.

Half-fare excursions the first and third Tuesdays of each month.

Let us know what you want, and we will tell you how to get it—but don't delay, as the country is filling up rapidly.

Printed matter, maps, and all information free.

Address **R. J. WEMYSS,**
Gen'l Immigration and Industrial Ag't,
LOUISVILLE, KY.

In writing, mention Gleanings.

Messrs. B. F. McBurney, Theo. Rockenfeller, and B. B. Boyer, formerly connected with the Farmers' Colonization Company, have entered into a limited copartnership under the firm name of McBurney-Rockenfeller Company, for the control, purchase, and sale of farm lands in the West, Northwest, and Southwest. They want good, live, active agents for sale of their lands in Wisconsin, Minnesota, Iowa, North and South Dakota, Arkansas, and Southwest Louisiana, and will pay liberal commissions to the right persons. Correspondence should be addressed to the McBurney-Rockenfeller Company, 703 Fisher Building, Chicago.

Sections, Sections!!

With a view to extending the circulation of the REVIEW I make the following special offers: For only $3.50 I will send the REVIEW for 1900, and twelve back numbers, and 1000 strictly first-class one-piece sections. The REVIEW and 2000 sections for $6.00; the REVIEW and 3000 sections for $8.75; the REVIEW and 5000 sections for $13.00.

W. Z. Hutchinson, Flint, Mich.

FOOD FOR REFLECTION.

If every colony in your apiary had, last season, produced as much surplus as the best one did, how much greater would have been your profits? Very likely your best could be improved upon; but you at least know to a certainty that there is a wide difference in stock, do you not? If interested in bees that produce these extra profits, investigate my strain of Italians. Untested warranted queens, $1.00. Send for particulars containing, also, "How to build a house apiary" (illustrated), as devised and perfected by late B Taylor, free.

JEWELL TAYLOR, Forestville, Minn.
Money-order Office, Spring Valley.

CHOICE HONEY QUEENS.

Last year, as the conditions were most favorable, I reared a large lot of queens from one of Doolittle's VERY BEST mothers. Only the best cells and virgins were used. I requeened a lot of my double-story ten-frame colonies with part of them. They are now running over with bees, though the season has been unfavorable. Prices of these queens are, tested, $1.50; select tested, $2.00; also untested, $1.00; dozen, $9.00. Send card for my circular. H. Lathrop writes: "I have bought queens from different breeders, and never got any that were better than those I got of you." Untested, in May, 75 cts.; six for $4 00; dozen, $7.50. **J. B. CASE, Port Orange, Fla.**

REMOVED!

EARLY QUEENS. W. H. Laws has removed his entire queen-rearing apiaries to Round Rock, Texas, where he will be better fitted than ever to fill orders for the LAWS strain of FAULTLESS 5-BANDED bees the coming season. BREEDING QUEENS always on hand. Price $2 50 each. I am also breeding the leather-colored stock from imported mothers. Tested queens, either strain, $1.00; 6 for $5.00; untested, 75c; 6 for $4.00. Queens ready in season.

W. H. LAWS, Round Rock, Texas.

We are Headquarters for the Albino Bee.

The Best in the World.

If you are looking for the bee that will gather the most honey, and the gentlest of all bees in handling, buy the Albino. I also furnish the Italian, but orders stand 50 to 1 in favor of the Albino. I manufacture and furnish supplies. Address

S. Valentine, Hagerstown, Md.

QUEENS. GOLDEN ITALIANS. Unexcelled for business, beauty, and gentleness. Bred from the best of stock obtainable. Untested, 70 cts. each; 6 for $3.75. Tested, $1.00 each. Extra fine breeding-queens, $2.00 each. E. A. SEELEY, Bloomer, Ark.

ITALIAN BEES.

One two-frame nuclei, with queen, $2.00; three-frame nuclei with queen, $2.50. Safe arrival and satisfaction guaranteed.

W. C. GATHRIGHT, Dona Ana, N. M.

Adel Bees Did it.

San Louis, Col., March 2, 1900.

Last spring (1899) I ordered queens from 5 different queen-breeders, and among them one from you. The bees from your (Adel) queen gathered more honey than the others all put together. (Signed) S. N. Smith, M. D.

Send for descriptive circular and full price List. Tested queens, each $1.50.

HENRY ALLEY, : Wenham, Mass.

DANIEL WURTH,

BREEDER OF

Fine Golden Italian Queens.

Merigold, Bolivar Co., Miss.

By this my many and kind friends and customers will see that I have moved from Falmouth, Ind., to Merigold, Miss., where I shall be better prepared to furnish queens than heretofore. I brought 80 colonies of five-banded bees with me, and will make the rearing of queens a specialty.

Untested queens during April and May, $1.00; after May, 75 cts. each.

Kindly thanking my friends for past favors, I trust to receive at least a part of their orders in the future. Remit by express or by postoffice money order.

D. WURTH.

Queens.

Use No Smoke. **It is not necessary** with the **Sweetheart** strain of bees. A postal card or letter will bring my descriptive circular and price list of these **gentle hustlers** and other strains. I am booking orders for them now, which will be filled in the order received. Don't delay.

A. J. WRIGHT,
Bradford, Steuben Co., N. Y.

Fruit Packages of All Kinds.

— ALSO —

BEE-KEEPERS' SUPPLIES. . .

Order your supplies now before the busy season catches you. Price list free. Address

Berlin Fruit-box Co., Berlin Heights, Erie Co., O.

The A. I. Root Company,

10 Vine Street,

Philadelphia, Pa.

Direct Steamer for Florida, Georgia, North and South Carolina, Virginia, Maryland, Delaware, and all points East and South.

All orders sent to Philadelphia office will have same attention and care as Medina. 1900 goods now in stock. Order before further advance. . .

These 4 Queens for Only 25c.

But remember, "these four queens" are on *four celluloid buttons*, each made with a pin, to be worn on the coat-lapel of every bee-keeper. The queen is shown with gold tinge, and the words are printed just as shown. A queen-bee on the coat will cause people you meet to ask questions about the busy bee, and many a conversation thus started will likely result in the sale of more honey, or give the wearer a chance to enlighten people in regard to honey and bees Of course, YOU will want one of them, and then will give the other three to the boys or girls in the family, who will wear them delightedly.

American Bee Journal and 4 Queen Buttons for Only 50c.

For only 50 CENTS we will mail to a NEW subscriber the four buttons, and the BEE JOURNAL every week from time the subscription is received until end of this year (1900).

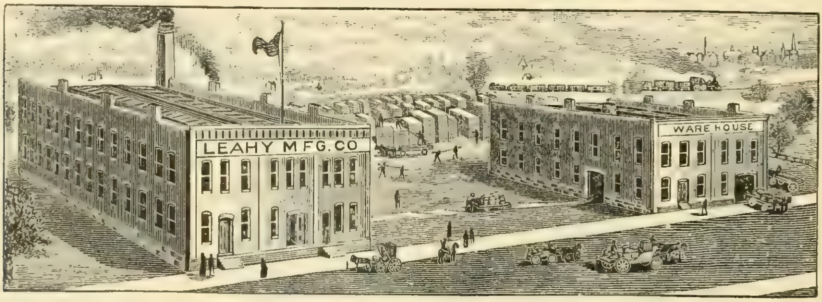
A Dr. Miller Honey-queen,

if preferred, will be sent with the BEE JOURNAL for the same time (instead of the buttons), to a NEW subscriber, FOR ONLY $1.00. These queen-orders will be booked now, and filled in rotation after June 1. (See page 292, GLEANINGS for April 15)

Geo. W. York & Co., 118 Mich. St., Chicago.

Catalog and sample copy of the weekly American Bee Journal free. Send for them. Address above.

Headq'ters in Chicago for Bee-keepers' Supplies.



For Apiarian Supplies, address **LEAHY MFG. CO.**

Higginsville, Mo.
1730 S. 13th St., Omaha, Neb.
East St. Louis, Ill.

GLEANINGS IN BEE CULTURE

A Journal Devoted to Bees and Honey and Home Interests.

Illustrated Semi-Monthly

Published by The A. I. Root Co. $1.00 per Year. Medina, Ohio.

Vol. XXVIII. MAY 1, 1900. No. 9.

STRAY STRAWS FROM DR C. C. MILLER

FRANK BENTON is quoted in *Australian Bee Bulletin* as saying that the product of *Apis dorsata* most desired is not honey but wax, and that the Philippines export annually 10 to 20 tons of wax.

A. ALFONSUS, Vienna, is making a new foundation. Instead of being smooth, the edges of the walls are notched and waving in imitation of nature. As with the Given, bees accept this more readily.

EDWIN BEVINS wants to know if the aguinaldo-tree mentioned by Harry Howe resembles in any or many respects the Philippine product that has been worrying Uncle Sam. Friend Bevins, I don't know.

"HONEY after candying, being warmed to liquefy, will not candy again," says *Australian Bee Bulletin.* But it will this side the globe, although sometimes keeping it in a hot place *for a long time* prevents candying.

ANSWERING Mrs. Bennett, p. 310, roaches troubled my bees while I used quilts which gave them a shelter where bees could not get at them; but with plain board covers and no place a bee can not follow a roach, not a roach can be found.

OH! CAN IT BE that "flies are flies because
they fly"?
Oh! can it be that "fleas are fleas because
they flee"?
Oh! can it be that "bees are bees because
they be"?—A. E. W., in *American Bee Journal.*

AFTER READING Dr. Howard's article, p. 298, one is tempted to ask, "Can we get any more for our honey by learning to say, '*Bacillus-ærobic-milii-arthro-endosporous'?*" However that may be, it's a good deal more comfortable to be somewhat informed in advance about such things, instead of being thrown into a panic when something seems to go wrong in a hive. Thanks, doctor, for your very instructive article.

A WORD of caution may not be amiss about pelargoniums. Friend Root says, p. 321, they are persistent bloomers. The fact is, that most varieties are annual bloomers, a perfect mass of bloom for two or three months, beginning March or April, then flowerless the rest of the year. Lady Washington geranium is the common name popularly applied to all pelargoniums.

C. H. CLAYTON has evidently been doing some thinking; but when he says, p. 296, "No combination will ever be able to maintain abnormal prices," one wonders whether he forgets the Standard Oil Co. [But the Standard Oil Co. does not have things *all* its own way, notwithstanding it probably does have more influence than any other agency or concern in advancing prices.—ED.]

DO GREASY SECTIONS and very ripe heavy honey invariably go together? Friend Whitney thinks they do, p. 310. I *think* it has been rather the other way in my observation. [Here is a case where there is some evident confusion. Mr. Whitney is probably speaking about one kind of greasy section and you another. In an editorial elsewhere I have attempted to describe the various kinds of discolored sections.—ED.]

UNCLE LISHA seems to half hint, p. 306, that all breeders but bee-breeders had been working to improve their stock. Bless your heart, Uncle L., you're behind the times. Talk about your improved sheep, hog, or cows! Just trot out a single one of them that has been bred up to the beautiful golden color we have in our bees. And here you are, grumbling as if tons of honey instead of beauty was the thing to work for!

AFTER THIRTY YEARS of no-license, the argument that liquor would be used anyhow, and we might as well have the license money in Marengo, prevailed. It took less than two years to prove what an awful mistake that was (I use the word *awful* advisedly), and this week each of the three wards went no-license. I've had a feeling of disgrace on me for the past two years, and now I'm very happy. Thanks, Ernest, for the help you were willing to give us when here. [See editorial elsewhere.—ED.]

CHALON FOWLS, I don't dispute that for you and other people in the East it may be best to keep your honey liquid; but there's one State in the East that's an exception—I mean Ohio. I knew a man in that State who succeeded—"grandly succeeded"—in educating his customers to prefer candied honey, and he sold more honey than any other man in the State, for good prices too. Could not some other Ohio man do what C. F. Muth did? [That's right, doctor—give it to him—I mean Fowls. He and I tried to argue it out in our office the other day.—ED.]

STENOG clearly has the joke on me. I've studied up all sorts of ways to explain or wiggle out of saying "foul-broody *hives*," but there it is twice in plain print, p. 293. I might say that the disease may be conveyed by the hives, so it's all right to speak of "foul-broody hives," but the uncomfortable fact remains that when I wrote hives I *meant* colonies. But you see if I don't get even with you, Stenog.—[As hives themselves may contain germs of disease, it seems to me your use of the words "foul-broody *hives*" was entirely proper—at least I meant no criticism thereon.—ST.]

THAT EDITORIAL, p. 311, sounds as if every bee-keeper ought to join the U. S. B. K. A. There's no need of that. If others join and go ahead with the work, I can have the benefit of what they do, and save my dollar. See? [It would appear as if some good men did see it that way; but I am sure they do not, and I rather think it is a matter of neglect. They believe that the Association is a good thing, and is doing a good work, and they *intend* to join it; but when they have a dollar handy they do not feel like writing; and when they do feel like writing they do not have the dollar, and there it is.—ED.]

BRO. A. I. ROOT, in that Home talk, p. 314 (and between you and me it's a fine talk), you say, "I think I am really disturbed more just now than I ever have been before in my life, in regard to the state of affairs, not only in our own nation, but in all nations." I never was more encouraged, and largely because good men like you *are* disturbed, and beginning to say they will no longer be "like dumb, driven cattle," bamboozled into saying that every thing the bosses say and do is just right. Doubtful if there ever was a time before when there were as many scared men at Washington for fear they would be called to account at home for favoring wrong measures.

DEVAUCHELLE strongly maintains, in *l'Apiculteur*, that the best way to get good returns in a poor locality is to have large brood-chambers and strong colonies; and now comes our good friend of smoker fame, p. 298, and teaches just the reverse. I sometimes wonder whether there's any thing we know, and know for certain, about bees. [Are you sure, doctor, that our friend Bingham is really an advocate of small brood-chambers? His hive is named the Expansive; and does not that imply that it can be made to accommodate large colonies, because, if he is a believer in small brood-chambers, why need he have an expansive hive? Have not the advocates of the divisible or shallow-brood-chamber hives said that such hives were adapted to any locality or to any bee-keeper because large or small colonies could be made as circumstances seemed to demand?—ED.]

AGAIN I want to call attention to the fact that in discussing greasy sections we are sometimes talking about two different things. A greasy appearance on the outside of the cappings caused by a deposit thereon, and possibly a difference in the cappings themselves, is an utterly different thing from sections that have the honey filled up against the cappings with no air-space. The whitest cappers in the world may have the first kind under certain conditions, and, indeed, under any condition if sections are left on long enough, the inside sections being first darkened as mentioned by J. T. Siler, and the queen was not at all responsible in his case. But when you find the greasy appearance due to the absence of air space, outside conditions seem to have nothing to do with the case. That Punic colony is by no means the only colony I've had that would make greasy (more properly watery) sections right through the entire season when other colonies capped white. [I will explain to our readers that Dr. Miller and I talked over this matter of discolored sections when I visited him at his home two or three weeks ago. After gathering a few more facts I prepared a statement of the various kinds of soiled boxes, including the greasy, the pollen-stained, the propolis-stained, travel-stained, and every kind of soiled section. There has been such a diversity of opinion that it is very evident we each and all have been talking about different things, when we *thought* we were talking about one and the same thing. If I have not fully described and named *all* the different classes, I hope our readers will correct me.—ED.]

PICKINGS
FROM OUR NEIGHBORS' FIELDS.
BY "STENOG."

May-day! hooray! all's gay!
Bees are buzzing, birds are singing,
Music through the woods is ringing,
Bells on frisky sheep are clinking—
Let us to the fields away.

AMERICAN BEE JOURNAL.

Under the head, "Fool Writers Still Lying," Mr. York gives the following as a sample of what he seems to consider the foolishness and adroitness at lying on the part of the New York *Mail and Express*. It is a sample brick of several more items just like it, from the same source:

> I know a man who keeps 50 hives of bees on the roof of his store in the city, and by hustling up plenty of glucose he gets enough "honey" out of the buzzing slaves to do a wholesale business in honey. Why, his bees never saw a flower, and would shy at a honeysuckle if they happened to come near one He will not even let the poor things have a recess to get a

drink of water, but keeps a pan of fresh water near the hives for them to drink.

In commenting on this Mr. York makes the following caustic reply which I most cordially indorse:

> How any self-respecting newspaper can deliberately publish such falsehoods as are contained in the clipping above is more than we can understand. But ten chances to one, should we undertake to show to the editor of the New York Mail and Express that one of his reporters had been writing what he (the reporter) knew was only a bunch of lies, that editor would only laugh and call it a fine joke.
>
> The awful degeneracy of the modern daily newspapers is something sad to contemplate. They care not for truth or honor, nor the reputations of men or business interests. We know of nothing else that is so much needed, and of which there seems to be such a limited supply, as honest men—absolutely honest and incorruptible.

That is all true. They live on sensational carrion, and their managers as a class know no more about rural matters than what they can see as they go up and down their elevator-shafts. If they were, under any circumstances, capable of correcting a mistake, the case would be more hopeful; but "What I have written, I have written," is their unchanging law. They are now circulating the claim that exportations to the Philippines and Cuba, in the shape of liquors, have fallen from a great figure to practically nothing since our occupancy of those places, and the government figures really make it seem true; but they do not tell the reader that "exportations" means only what is sent there from countries outside of this; that is, what we send is not an exportation, as it goes to our own people. The plain figure of what is sent from the United States to Cuba and Manila is artfully concealed under the word "importation." The latter is about 1000 times greater than the average for ten years preceding the Spanish war.

CANADIAN BEE JOURNAL.

The following notice regarding the spraying of fruit-trees was published in connection with the bulletin issued by the Ontario Department of Apiculture, March, 1899:

> Do not spray trees when in full bloom. 1. It is not the right time to spray. 2. It may destroy insects that are then fertilizing the blossoms. 3. It is destructive to the bees. 4. It is forbidden by law.

BRITISH BEE JOURNAL.

A correspondent received a visit from a missionary from China, and from him learned the following:

> In China, when a bee-keeper either builds his house himself or gets it built, provision is made in his house for the bees by providing cavities in the brickwork forming the sides of the house. These recesses are about 3 feet from the ground, and of about 2 feet by 1 foot internal dimensions, the open front being closed afterward with a piece of wicker-work plastered over with mud, save a tiny hole left as an entrance for the bees to pass in and out of their strange abode. By this arrangement John Chinaman is not troubled in getting his hives overturned without his knowledge by some stray cow whilst he is asleep, through the garden gate being left ajar overnight; neither is he troubled with the rain wetting the quilts, etc., through a leaky hive-roof.

* * *

A fine view of the apiary of Mr. H. Rowell, of Hook, Winchfield, Hants, is given. Mr. R. sells about 1600 lbs. of honey a year, and that without advertising. He claims to have an attractive article in the first place. His wife glazes the sections. He sometimes sells as much as $20 worth at shows. His little daughter, Dolly, twelve years old, one of the real queens of England, assists him, and can hive swarms, transfer frames of bees, move a stock from one hive to another, and put on supers. Last August she assisted Mr. Bellairs, secretary of the Hants B. K. A., at a lecture in Basingstroke, by driving a colony of bees from a skep into a hive. It was the first time in the experience of Mr. B. when he was assisted by one so young.

AUSTRALIAN BEE BULLETIN.

The bee-keepers of Australia are making an effort to send a large quantity of honey to the British troops in South Africa. Mr. H. L. Jones has offered 500 lbs. The offer has been gladly accepted by the military authorities. Cape Town, Africa, is exactly west of Adelaide, Aus., a distance of about 5760 miles.

* * *

In speaking of American money, Mr. Harrison says: "How handy that decimal coinage for reckoning up cash!—2500 lbs. of honey at 10 cents; add a cipher—25,000; point off two naughts and add the dollar sign—$250.00—and there you are. Two hundred and fifty dollars and no cents. Yes, we would be content with the sum without any odd cents." All very true; but it's beyond the comprehension of the average American, as yet, to see how weights, lines, and areas, may be divided by the decimal system in the same way a dollar is. The chief difficulty in the way of its adoption, as in reformed spelling, is the fact that something else already occupies the ground. In the case cited, it would be better to cross off the right-hand figure of 2500 at once, and that would show the number of dollars. The same correspondent, in speaking of honey from sugar cane, says, "The poorest treacle was a king to it."

CALIFORNIA ECHOES

BY J. H. MARTIN.

A solar wax-extractor with bottom heat is not a new thing in California. Mr. E. H. Schaeffle has devised and uses an extractor that uses solar heat on the bottom through reflection.

A sure way to stop robbing. To stop a mild case, throw a handful of coarse grass before the entrance; for a more severe case, saturate the grass with water; for a very bad case, saturate the grass with kerosene oil.

James A. Boyd, of Traver, Tulare Co., has received good returns from his 40-acre home the past year. He has 11 acres in peaches, 7 of which are in Albertas and Muirs and 4 in clings. From these 11 acres Mr. Boyd sold $2600 worth of dried peaches. From five acres of vineyard he sold $977 worth of raisins. The remainder of the 40 acres, which is not occupied by farm buildings, etc., is devoted to alfalfa. He sold three calves for $60, and $130 worth of hogs, besides $200 worth of honey. Total, $3967. No account has been kept of the money received by Mrs. Boyd from poultry, eggs, etc., but the above figures show a pretty good income from 40 acres.

The foregoing will show what can be done on a 40-acre ranch planted to fruit and bees. The above is only a type of many. There are but few vacant houses in this locality; no persons out of employment; no tramps, no bedbugs; fleas searce, and general prosperity.

A bee-keeper in the South writes me: "Is there a chance for more apiaries in your vicinity?"

Reply.—It is 12 miles from Reedley to Traver. Within that 12 miles are now over 1200 colonies of bees. That's about the size of the chance.

Rather peculiar, Bro. Root, that this young State, and sometimes considered wild and woolly, is ahead of the staid old Ohio in temperance work. Here the voters have the power to establish sanitary districts, and that means the exclusion of the saloon. Several districts have been recently formed in this vicinity. The following quotation from a local paper will show you the way they do it:

> A noticeable feature of the election was the great number of ladies in attendance. Almost every voter was accompanied by his wife. And the ladies came prepared with all the good things to eat imaginable Dinner was served free to every one under the big tent which E. S. Philips, the Atla merchant, had furnished them for the occasion, and no one went away hungry. The presence of so many women and children on the grounds gave Atla the appearance more of being a picnic ground than of a voting-place.
>
> With the heavy vote cast for the formation of sanitary districts, including the votes of many men who either tipple or are hard drinkers, it proved that those who patronize the retail saloons will vote to down them when given an opportunity.

Page 219, bees on shares. So far as my observation and experience go in this State, the owner of bees does not allow the party of the second part to have any of the increase. The plan usually followed, and one that seems to be the most satisfactory to all concerned, is for the owner to furnish the bees, hives for increase, and receptacles for his share of the honey. The party of the second part has half of the honey and wax; provides receptacles for his portion of the honey, and leaves enough honey in the hives at the close of the season for the sustenance of the bees. As both parties are after the most profit possible in the amount of honey, it is for the interest of both parties to prevent swarming as far as possible; and where the extractor is used the swarms are few. The equal division of the products is easily accomplished, and there is seldom disagreement. If Mr. Coney will come over to Reedley, Fresno Co., he can see just how Mr. McCubbin and I are doing it.

Central California has a flourishing association for the marketing of their product. They have started in right, and in line with Arizona and Colorado—no salaried manager and other useless expenses. The sales are made at a minimum expense to the producer.

From the foregoing Echoes the reader will notice that I am one of those bee-keepers who have migrated to Central California, and have just enjoyed an old-fashioned thunder-shower. About an inch of rain fell in half an hour. It is putting in its best licks in this locality to make up for lost time. I hope the same conditions of moisture extend to the brethren south of the Tehachapi Mountains.

GENERAL CORRESPONDENCE

THE CANDYING OF HONEY.

Candied Honey Recommended; a Possible Explanation of the Fact that One Jar of Honey will Candy, and Another Not, Both from the Same Lot: How to Hasten Granulation.

BY S. T. PETTIT.

Mr. Root:—At the Colorado State Convention, page 117, *American Bee Journal*, you say: "Bee-journals have not done their duty in recommending the sale of candied honey." That may be true; but I blame bee-keepers more than the journals. I have always advocated selling in the candied form, and also exhibiting largely in that form. Much good can be done in that line at expositions. I am glad to see the tide rising. Let us talk it up everywhere.

At the same convention Mr. H. Rauchfuss said: "I sold some honey in a can that was poured into jars. One jar remained liquid, and the rest is solid." A quarter of a century ago I had the same experience. The grocer wanted an explanation, and I was troubled. But now I think the explanation not difficult. The specific gravity of dextrose is greater than that of levulose; hence the former gradually drops below the latter; and the greener or thinner the honey, the more rapid the process. In filling the jars the thin levulose would first flow out. In filling, drawing off through a gate, very largely the same thing occurs. Even in well-ripened honey, though to a less degree, the dextrose, in warm weather, gradually moves toward the bottom. Levulose granulates exceedingly slowly, if at all.

The above facts may serve to explain why one jar poured or drawn from the same container may remain liquid while the others from the same container granulate readily. All honey should be well ripened by the bees; and, before being filled into small containers, it should be well stirred and mixed from bottom to top; then the samples will be uniform, and each contain its proper proportion of the ingredients of honey; neglect in this regard is the cause of much lopsided honey on the markets.

Then, again, you are reported as saying: "The fact that the honey is *solid* is absolute evidence that it is pure." May I suggest that that is a dangerous thing to say, for I know you are quite mistaken; but fearing harm would result from giving the process of adulteration, and the product becoming solid, I think best to withhold it.

With regard to the matter of hurrying up the process of granulating honey, the surest way and the cheapest that I know of is to leave the combs smeared with honey at the last extracting. Tipping the honey several times a day, just a little, will hasten granulation. This can be done cheaply on a large scale. I don't like stirring to hasten granulation. Too much air becomes incorporated, which will greatly injure the honey if kept over until warm weather. Honey will granulate more rapidly if placed in a building with thin walls, so that it will be affected by the change of temperature every day and night.

Before the process of stirring and filling honey into small containers, it should be pretty well warmed up; then it will mix easily and well, and the honey will run quickly, and much more can be done in a given time; and, more, the air will rise to the top, and thus ensure the keeping qualities. These points are all well worth putting into practice.

Aylmer West, Ont., Can., Feb. 27.

[This matter of why honey in one bottle will candy, and not in another, both from the same lot, was discussed considerably at the Colorado convention. I believe you have offered a very reasonable explanation.—Ed.]

ASPINWALL'S COMB-HONEY SUPER.

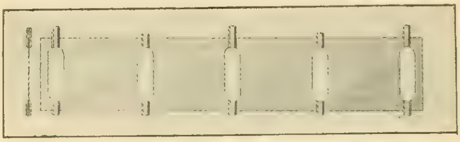
The Advantages of Tin Separators with Transverse Slots for Plain Sections.

BY L. A. ASPINWALL.

Mr. E. R. Root:—Previous to the past season my supers consisted simply of clamping sides and tin separators having transverse or vertical slots, which, with plain sections, were held together with bolts. These supers, being elastic as to width, were adapted to my non-swarming hive. According to the requirements of the colony they averaged about 32 sections, although many of them contained an additional row, making 36 in all. But a gradual enlargement of my hives necessitated larger supers, hence the adoption of section holders. My principal object in using them was to give added strength or support for the sections. The clamping of 36 sections together without the additional support of holders or a case, as in the T super, is entirely satisfactory unless a larger number is required. It works splendidly with 24 or 28 sections.

With hives of my present construction, I use supers having a capacity for 48 sections. I find, with average seasons, tiering is not wholly satisfactory, the wide supers giving far better results. This applies especially to hives of my construction.

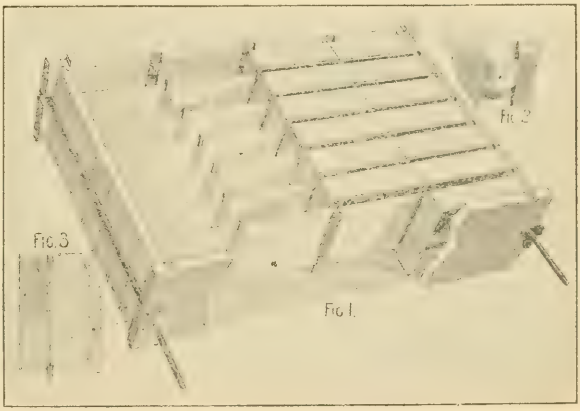
Having stated my reasons for adopting the section holders, I herewith furnish a description of the super complete. Fig. 1 is a perspective showing a 28-section capacity, having one side partly cut away. Of course, readers of GLEANINGS know my partiality for plain sections, hence they are shown in the illustration. The super sides and separators both have transverse or vertical passageways, which enable the bees to pass from section to section longitudinally. This is according to nature.



ASPINWALL'S SEPARATOR FOR PLAIN SECTIONS.

Fig. 2 shows one of two projections which are made in each of the transverse passageways of the super sides. These serve to hold the sections a bee-space from the sides, as also do the metal projections at each end of the vertical openings in the tin separators, as shown in the separate illustration. The alternate openings have longer projections on the lower side, which are supports maintaining the requisite height when filling the super (which should be done on a level bench or table), also to maintain the position of sections right with the holders.

Fig. 3 shows an end view of sections, separator, and side, as held by the projections. The tins are sufficiently long to be clamped between the ends of the section-holders, which gives great rigidity after being bolted together. It may not be amiss to state that the holder ends are ¾ inch thick, which strengthens and prevents the bottoms from sagging with the sections. The long metal projections also aid in this respect.



ASPINWALL'S SLOTTED TIN SEPARATOR SUPER FOR PLAIN SECTIONS.

The reader will notice the upper and lower edge of each super side is beveled, affording beeways equal in width to those throughout the super. Notches are cut in each end of the super sides to admit a slat when tiering. The two sides enable tiering without the usual danger of crushing bees.

Speaking of separators with transverse or vertical openings, I must still express my admiration for them. As already stated, they are in accordance with nature, and aid in securing well-filled sections.

The past season having been very unfavorable to the storage of honey, and while more than the usual number of unfinished sections have been reported, I have never had a smaller proportion. The best was from a super of 28 sections having 13 well filled, and the foundation not even drawn out in the adjoining ones, all having full sheets.

Jackson, Mich., Feb. 7.

[This is the Mr. Aspinwall who has used plain sections for some eight or nine years, and who has the reputation of producing some of the nicest comb honey ever seen. Even his second-grade lots of sections are better filled out than the average beeway sections on the market.

Recently I learned that he had made some improvements in his comb-honey super, and accordingly requested him to send us a sample super that I might show it to our readers. This he sent, and the engraving of it is here shown.

I think there is no question but this transverse slotted separator, one that he seems to have originated, with beeway projections, will produce as fine honey as can be found anywhere; but it has one quite serious objection—expense. Such separators would cost the average bee-keeper somewhere about 5 cts. each, or 30 cts. per super; whereas the ordinary fence for plain sections will cost about 1⅓ cts. each, or about 8 cts per super. There is still another objection; and that is, that these tin separators will be quite frail at the points above and below the slots, and would require a reasonably careful handling; but in the case of men like Mr. Aspinwall they will probably last a lifetime. If so, the expense item as well as the frailty objection would be both largely overcome.

Mr. Aspinwall is an inventor, and a mechanic as well. Indeed, I believe he is at the head of the Aspinwall Manufacturing Co. that is manufacturing a number of machines of Mr. Aspinwall's invention, which machines are pretty well known throughout Michigan and other States. Such a man would, as a matter of course, invent a super that would be worth the careful consideration of bee-keepers.—Ed.]

WINTERING ON CLOSED-END FRAMES.

The Advantage of Such Frames.

BY T. K. MASSIE.

When I wrote the article, the "Evolution of the Hive Question," I intended to speak of the advantages of a closed-end frame for wintering purposes, *from my view-point;* but the grip had me so completely in its grasp that I don't know whether or not what I did say was said in the manner in which I wished it to appear.

The closed-end frame, forming, as it does, a double wall, at least so far as the ends of the hives are concerned, has great advantages over the open-end frames. My Dr. Tinker hives are made of thin material, ¾ inch for ends and ⅝ for sides. In these thin-wall hives I winter on the summer stands. Each brood-chamber contains eight closed-end frames, and I use two brood-chambers (occasionally three) tiered up for a complete hive. I use thin ⅜-inch covers over the frames or sections the entire year. The only preparation is simply this: While the weather is yet warm in the fall, say the first of October, I see that each colony is bountifully supplied with stores to carry it to May. I place the thin cover on the hive, pressing it down firmly, and leave it for the bees to seal up air-tight with propolis. (This cover is just a bee-space above the frames.) Over the cover I place a cushion filled with some non-conducting absorbent to prevent the escape of the bee-heat. I now cover the cushion, "hive and all," with a telescope cover and leave them absolutely alone, not allowing any animal or rodents to disturb them till settled warm weather, say the last of April or first of May, at which time I overhaul and arrange each colony according to its requirements. Last winter the cold weather reached below zero for a number of days at a time, being 20 to 25 at one time for five days. I lost only 2 out of 93 colonies, and those two starved by not being able to cross over the space between the combs of the upper and lower brood-chambers, which are, top-bar, ⅞ inch; bee-space ¼, bottom-bar ¼, or 1⅜ inches. A top bar of less depth and a bee-space connection of some kind will prevent this trouble, as my experiments so far fully demonstrate.

So far this winter, with same arrangements (40 of my hives being the Danzenbaker hive with closed-end frames), I have not lost a single colony out of 117; and from Feb. 2 to the 7th of March the weather has been very cold, reaching below zero several times. With plenty of stores in closed-end frames, and sealed cover, I have no fears of winter losses provided we have strong colonies of young bees, and they are left absolutely undisturbed. Manipulation in winter breaks the sealings, admits the air currents, and allows the bee-heat to escape, thus preventing rapid brood-rearing in early spring, which greatly damages the colony, so far as a crop of honey is concerned.

In support of my position that the style of the frame (which is really the foundation for the size and style of hive) has a great deal to do with successful bee-keeping I will quote from our friends Aikin and Doolittle. In the *Progressive Bee-keeper* for Dec. 1, 1899, page 360, Mr. Aikin says:

> There is no question whatever that the size of a hive (and the shape to some extent) is more or less a factor according to location. I have *repeatedly* tried wintering and springing in a very small chamber, for instance, nine frames 13 inches long and 6 deep, ten

frames 17 inches long by 4¼ deep, and single Heddon chamber and others, and I almost invariably fail to get a colony that will be of any account whatever by the honey-flow June 15th, and this in spite of the fact that the colony never gets out of honey; but just give two or three of such chambers and plenty of stores, and I get rousing colonies. It is not enough that there be still a *little* comb unoccupied with brood; there must be plenty in sight inviting the queen to occupy.

To which Mr. Doolittle, page 363, replies:

> *Depth of Frame.*—Friend A. tells us how he has invariably failed in securing colonies "that will be of any account whatever by the honey-flow June 15th," in using single brood-chambers having frames of the depth of the Heddon or shallower, even though the colony did not get out of stores; therefore he concludes that he wants a large hive. Well, with me that *failure* points toward those shallow frames throwing the *cluster* out of its normal conditions, rather than the smallness of the hive. Had he used the same number of cubic inches in a hive having frames ten or twelve inches square in it, and then put on his surplus arrangement when needed by the bees, he would have found that such colonies might have compared favorably with those in his large hives. . . . Any thing which throws the cluster or colony out of its normal condition tends toward a less yield of honey, and especially something which brings on this abnormal condition a few weeks preceding the honey harvest.

Except the depth of frame advocated by friend Doolittle, I fully indorse what the brothers say above.

Box hives are usually made square, say 12 to 15 inches, and 18 or more inches deep. Hive an early large swarm in one of these hives and we can see how the bees work when left to their *natural* inclinations. They begin building comb at the top, filling with brood and honey, and chinking all crevices with propolis, thus making the hive air-tight, till they reach the bottom, where the winter cluster is formed on the bottoms of the combs, the winter stores just over their heads. The bee-heat enables them to follow up their diminishing stores through the cold weather till spring, when we find brood-rearing commences in the top of the hive, and again the downward work, which continues through the summer, commences. Therefore I conclude that a reasonably deep comb is best for wintering purposes. But we know that for the best results in comb honey we need a hive that can be contracted, hence two brood-chambers of shallow frames, like the Danzy closed-end frame, for instance, is the best and quickest way to accomplish the two objects sought; viz.: successful wintering and a large crop of comb honey. Side contraction with dummies is objectionable because it throws the "cluster out of its normal condition," and gives us just that much more work in handling so many loose pieces. Contraction, by removing a brood-chamber, or converting the same into a super filled with sections, has neither of the above objections connected with its manipulation.

Tophet, W. Va.

* * *

STARVED OR BLACK BROOD; HOW TO TREAT.

BY W. L. HAWLEY.

Dr. Howard is undoubtedly correct in saying that the diseased brood sent from York State is caused by scarcity of food. In May, 1897, I had over 200 colonies affected. Over half were very bad; in fact, if not checked it meant ruin to me. At first I thought it was foul brood; but on thorough examination I came to the conclusion that it was not foul brood, but something else. I could not say it was pickled brood, nor could I call it starved brood, as we had been feeding all colonies, and every colony had an abundance of honey. On examining the colonies more thoroughly I soon discovered that the colonies that were affected the most had no pollen — not even one cell. What pollen there was coming in was immediately used up.

Being sure that I had discovered the cause, now for the cure. I procured one pint of crude carbolic acid, and a pail that held 2½ gallons of water; put into the water 2½ tablespoonfuls of the crude acid, procured a four-inch flat paint-brush, and with this brush, water, acid, and smoker, I proceeded to the first treatment with hive No. 1. I gave them a little smoke to let them know I was around; lifted the cover off, removed the quilt, and proceeded to sprinkle the top of the brood-frames, bees and all. I gave them a good dousing. Don't be afraid. It will not hurt them; and when you think you have given them plenty, give them a little more for luck. Stay with it till you see the water running out of the entrance of the hive; then replace the quilt, and sprinkle it until it is damp. Treat the rest of the yard the same way. Don't miss a single colony, if you want to make a clean job of it. Then 24 hours later take a pailful of wheat flour and your smoker; proceed to hive No. 1; go through the customary introduction of smoke; open the hive and remove one or two empty combs. Take one of the combs; hold it in any position over the colony, and proceed to get as much flour into the cells as you can. When you have filled the comb as full of flour as you can get it, replace it in the hive on one side next the brood-nest. Put the second comb, after it has all the flour you can get it to hold, on the other side of the brood-nest; and if the colony has not enough honey, feed it until it has. Do the same with every colony in the yard.

Examine all the colonies once a week; and if any colony gets short of flour or honey, feed either or both as the colony may need, and in three weeks' time you will have no sign of the disease.

The use of the carbolic acid is to help the bees clean house. By making all decayed brood the same scent, and also in scenting old brood, musty and sour pollen that may be in the hive, the bees will remove all such pollen as soon as the flour is added to the store.

Don't feed flour or any other substitute for pollen out of doors, as it is a bad way to spread any disease. Feed it to them in the comb direct by placing comb in the hive.

Fort Collins, Col.

[I should incline to the belief that you did not have real black brood, or it would not have succumbed so easily to your treatment. The same method will not cure foul brood, for I have tried it repeatedly and faithfully, without apparently doing any good. If you have any more of this diseased brood, send me a sample in a stout tin box. I think I could determine whether it were the same as has been found in New York.—ED.]

* * *

OUR OWN APIARY AS IT IS SEEN IN THE EARLY SPRING.

BY ERNEST R. ROOT.

We have given our readers two or three views of our home yard when the grapevines were all in leaf. But such views necessarily obscure the hives, almost completely hiding them. Thinking that our readers would like to see how many hives we have (or, rather, a part of them) we took a view from a roof of one of our buildings, and the same is reproduced in half-tone on another page. This is the old original apiary, the hives being arranged on the hexagonal plan as originally laid out in 1879—just about 21 years ago. While it presents a very pretty appearance, yet if we could do it over again, that is, change the grapevines, we would arrange the hives in groups, either in pairs or fives, for the sake of economizing space, economizing steps, and economizing labor in general. Then if I could have my way I would have basswoods about 20 or 30 feet high, and under each tree I would put about five hives; each group of five would be placed 16 feet apart, so that a wagon could be driven down between the rows whenever necessary.

The photo shows only about three-fourths of the home yard, the rest of the hives being out of view. The out-apiary (which is not hauled away until just at the approach of the honey-flow) does not show in the view. This is arranged on the group plan, and our men all unite in saying that in this portion of the yard they can do more work, and more comfortably, than they can in the main apiary where each hive has a stand by itself. The grapevines, our people all voted as a nuisance. The young shoots with their tendrils will sprawl all over, catching in clothing and veils while one is working the hives. While vines afford fairly good shade they need a great deal of care, and then it is practically impossible to work with bee-tents, which we consider so necessary in queen-rearing, during the robbing season.

In our next issue I will give you a view of an apiary in a grove that looks so delightfully cool and pleasant that one almost envies the owner the privilege of working in that yard. If trees are trimmed high so that the sun can strike the hives up till about 9 o'clock, and again about 3, there will be no trouble from too much shade; and during that portion of the year when the bees need all the sun they can have, the trees will not be in leaf; and just so soon as the sun begins to get too hot, nature provides automatically the necessary shade during the heat of the day. Nothing, to my notion, equals a good tree properly trimmed; and nothing anywhere near so economizes labor as having the hives in groups, because one can use one hive to sit on while he is working at the other, or he can use them as benches.

CLOSED-END FRAMES.

How they should be Constructed; how to Keep Noxious Insects from Hives: a New Method for Introducing; Perforating Separators.

BY W. B. RANSON.

[The following letter, addressed to Dr. C. C. Miller, was by him sent to us with the remark, "Some good things in this." On reading the same I found myself of the same mind, and I therefore take pleasure in placing it before a larger circle of readers.—ED.]

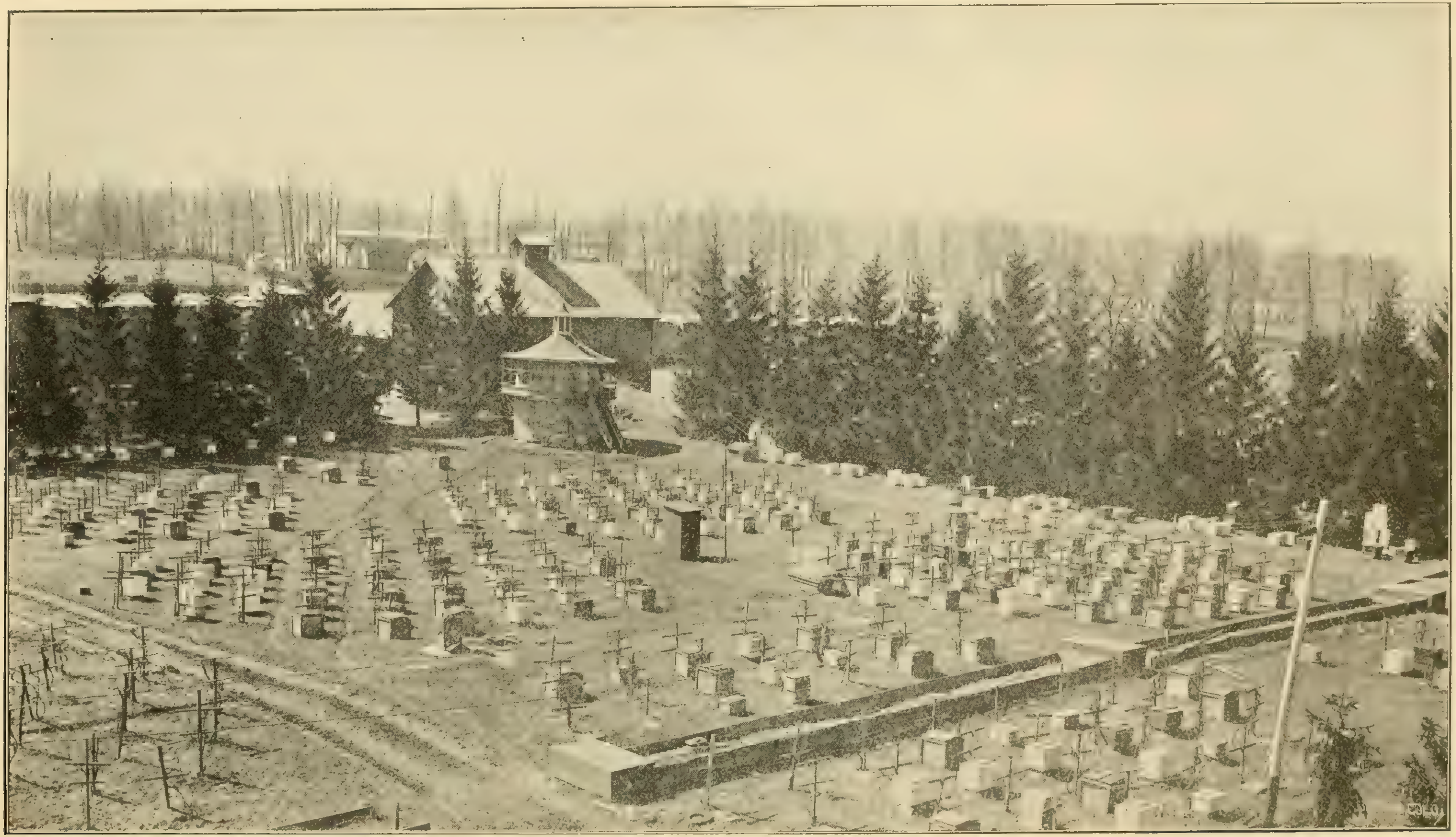
My bees wintered last winter without the loss of a colony, and came out strong in the spring. All wintered on summer stands, as I abandoned the cellar years ago, and have not lost a colony of bees in wintering for six or seven years. My neighbors lost many last winter. I will give later my method of packing. I am using over 200 closed-end frames, and like them much for outdoor wintering. Right here it is surprising how little trouble with propolis I have when bees are shut out from the rabbets and from the outside of the end-bars of the closed-end frames. Practice for years here in the Rockwood apiary convinces me thoroughly that the best way to keep propolis off is to shut off the bees from all parts of the brood-frames except the inside, and that the bee-space outside of the end-bars is a mistake. The first Hoffman frames sent out with the wide ends of the top-bars closing up the rabbets are best for this practice; and a wedge-shaped strip across the ends of the hive at the bottom, so that the closed-end frames fill at bottom, and the wide ends of the top-bars close up the rabbet, the propolis gives less trouble than one would expect.

Last season, although a very light honey-flow, my bees gave us an average of 50 lbs. of comb honey per colony, of very superior quality, and for which I received 12½ and 15 cts. for the two grades here at the yard, and empty cases returned. So much for home market. The management outlined in my letter, given in GLEANINGS, p. 260, 1899, gave the best results, and kept down increase admirably. Now for a few notes.

To keep ants, bugs, roaches, grass, etc., from hives, take a common sprinkling-pot filled with coal oil, and at night sprinkle the hive-stands and grass, but don't let it touch the bees.

To get the bees to finish the outside sections in the super, place a piece of tin over the middle brood-frames so the bees will pass to the super at the sides and rear end.

To introduce a valuable queen, take a large Benton cage and provision it, and put the queen in it all alone. Take out the queen from the colony to be requeened, and at the same time pick off from the combs 12 or 15 young bees just hatched; put them in a cage; wait a moment for these babies to crawl over the queen and scent her with their damp feet and wings. Now pick off another lot, a little older, and put them in, and in another minute pick off a dozen still older, say those old enough to shed their veils. Now close up the hive for an hour. Take the cage with the queen and 40 or 50 bees, and notice them care-



A PART OF THE HOME APIARY OF THE A. I. ROOT CO., AT MEDINA, OHIO.

fully; and if the older bees should attack her, smoke them; but they would hardly do that. In a few minutes you will find the oldest bees caressing the queen, having accepted her in the cage. Now give them to the colony to eat out the candy and liberate the queen; and if the work was properly done, the queen is perfectly safe. It seems that the damp feet and wings of the very young bees in crawling over the queen cause the older bees to accept her in the cage; and once they commence to caress her in the cage she is safe. I introduce virgin queens in this way without difficulty.

To perforate separators, take a hard-wood block sawed off smooth. Lay the separator flat on the block, and with a light hammer and a ¼-inch belt-punch cut the holes as fast as one can strike, and move the punch, making the perforations nice and accurate in size; and by dodging the holes in the rows, broken-range fashion, make a better separator than slats, as the face of the comb honey is less likely to be ridgy than when an opening runs all the way across between slats.

Newriver Depot, Va., Feb. 12.

SOME DIFFICULTIES IN CONNECTION WITH FOUL BROOD.

Read Before the California State Bee-keepers' Convention; a Clear Concise Statement.

BY THOS. WM. COWAN.

Those who have had very much to do with foul brood will readily admit that, for the average bee-keeper, there are many and serious difficulties in connection with this disease which baffle him, and can be overcome only by an intelligent mastery of the subject. The disease is allowed in many cases to break out and spread, without the slightest precaution being taken, sometimes through ignorance, carelessness, or indifference on the part of the bee-keeper, to the detriment of others keeping bees in the vicinity. In consequence of this it is no wonder that foul brood is spreading, and that there is a demand among intelligent bee-keepers in all countries for legislation to prevent the industry from being destroyed. To be brief and concise, I will mention only some of the difficulties we have to encounter to make people understand the conditions under which the disease exists, or to study its etiology.

1. That foul brood is terribly contagious, and that as great care should be exercised in dealing with it as with smallpox or cholera. What these diseases are to man, foul brood is to bees.

2. That foul brood is a germ disease, and is produced by the presence of a minute organism called *Bacillus alvei*, which exists in two different forms. In the earliest stages of its existence it is in the form of a rod, and is usually then termed *bacillus*, to distinguish it from the later stage, or *spore*, as it is then commonly called.

3. That there is a great difference between these two stages; and as both may exist in the hive at the same time, the treatment that would destroy the one would have no effect upon the other.

4. That *Bacillus alvei* is in form rod-shaped; and each rod, as it attains full growth, splits in two, each of these taking up an independent existence, and going through the same process; and as two generations can be raised within one hour, the same rate of progression being kept up by each individual, it is not astonishing that foul brood spreads so rapidly.

5. That under certain conditions bacilli have the power of forming spores which are analogous to seeds or plants, and are endowed with wonderful vitality, being able to endure adverse influences of various kinds, without injury so far as their germinating powers are concerned. Boiling water and freezing will kill bacilli but not their spores. In the same way chemical reagents which readily destroy bacilli have no effect upon the spores unless given in such strong doses as would kill the bees. (It is extremely difficult to make people understand this great difference in the vitality of bacilli and their spores, and it is here that the great danger arises.)

6. That spores coming in contact with suitable nutrient material have the power to germinate into bacilli, after the lapse of long periods; and according to Dr. Klein, one of our best authorities, there is no reason to assume that these periods have any limit. This is why the disease sometimes breaks out in districts where bees have not been kept for years.

7. That experience has shown with foul brood, as in all epidemic diseases, the weak, sickly, and badly nourished are attacked and become centers of infection to others; and so rapidly does the disease spread by contagion that, unless precautions are taken, a whole neighborhood may become affected in a short time.

8. That colonies suffering from foul brood are usually weak, and this induces bees from other hives to rob them of their honey, and thus carry off the germs of the disease along with their ill-gotten gains.

9. That combs which have contained foul brood retain the spores. The queen lays eggs in the cells, and the workers deposit their honey and pollen in them. Both honey and pollen in this way become vehicles for the transport of the disease to the larvæ in the process of feeding by the nurse-bees. The workers, in endeavoring to clean the combs, scatter the spores, which may also be driven out of the hive by the current of air produced by the fanners at the entrance in their endeavor to rid the hive of foul odors.

10. That, if on examining the combs, to all appearance healthy, with brood compact and larvæ bright and plump, we find here and there a cell with young larvæ moving uneasily, or extended horizontally instead of being curled up, and changing to a pale yellow color, we at once detect the first symptoms of foul brood. The germ at this stage being only in the rod form, the further progress of the disease can be arrested by feeding the bees with syrup, to which a suitable antiseptic drug is added. The bees then generally remove the dead larvæ.

11. That apart, however, from experienced bee-keepers or trained experts, very few are fortunate enough to detect the disease at such an early stage, or effect a cure so easily.

12. That when the combs have irregular patches of brood, with sunken and perforated cappings to the cells containing the putrid, coffee-colored, ropy mass inside, the treatment should be:

a. If the colony be weak, destruction of bees, combs, frames, and quilts, together with thorough disinfection of hives, is by far the best course to pursue. We thus destroy the spores, and so remove the source of infection.

b. If, on the contrary, the colony be still strong, the bees may be preserved by making an artificial swarm of them, and feeding them on medicated syrup for 48 hours, after which time they can be placed in a clean hive furnished with sheets of foundation, and fed with medicated syrup for a few days longer. The combs, frames, and quilts are burned, and the hive disinfected by being either steamed or scrubbed with boiling water and soap, and then painted over with a solution of carbolic acid; and when the smell has disappeared, the hive is ready for use. (The bees are allowed to remain 48 hours in the empty hive, for by that time the honey that they may have taken with them, and which might contain spores, will have been consumed, and the diseased bees will have died off.)

13. That in his endeavors to rid his apiary of foul brood, the bee-keeper must also raise to its proper standard the lowered vitality of the bees which enabled the disease to get a footing. This he must do by keeping his bees strong with young and prolific queens, good wholesome food, cleanliness, and proper ventilation.

14. That the bee-keeper may himself be a cause of spreading foul brood by indiscriminately manipulating, first diseased and then healthy hives, without taking the precaution to disinfect himself or his appliances. Clothes, appliances, and hands should be washed with carbolic soap, and other articles disinfected by spraying with some suitable disinfectant.

These are only a few of the many difficulties, and only the fringe of the subject has been touched upon; but sufficient has been said to show that, unless great precautions are taken, it is very difficult to get rid of the disease. It thus becomes obvious that those who fail to realize the danger of infection, and who will not take proper means of ridding their apiaries of foul brood, or of preventing its introduction, are a real danger to the industry.

[No. 5 should be read very carefully by every bee-keeper, because it is a fact that many of them do not or will not understand the first principles with regard to all contagious diseases. Indeed the whole article will bear careful reading.—ED.]

C. R. M., Texas.—As yet we know of no reliable cure for bee-paralysis. The best I can advise you is to destroy the queen and then put the bees on clean combs or frames of foundation with good food.

SHOP-TALKS.

Why Bees Swarm.

BY UNCLE LISHA.

I had just got my fire built, and my workshop was warming up, when who should drop in but Deacon Strong, with a cordial good morning?

"Good morning, deacon; glad to see you."

"Thought I would just step in and inquire how your bees were wintering."

"Pretty well, deacon, I think. I was out to my north yard the other day, and looked them over. Thieves have been at work there some, and there were a good many colonies that were pretty weak, and they were packed when the weather was warm, and I was afraid there were a good many that were not crowded up close enough, and I was glad I went. Bees are now clustered so close I could tell to a dot just how strong they were, and I had occasion to take out a good many combs of honey, and, with an extra division-board, reduce the brood-chamber to four or five combs. The bees would have had hard work to pull through if I had not looked after them."

"Why," said the deacon, "I never heard of any one doing that before in winter."

"Well, I never did either; but a bee-keeper has got to be on the lookout or he is very liable to meet with loss."

The deacon hacked and coughed a little, and then began:

"I liked what you said in GLEANINGS about improving bees so as to get more honey. It is a pretty good idea if it can be done; but I think you were a little hard on Culley. I think just as Doolittle does. Bees were told to multiply and replenish the earth as well as every thing else, and they are going to swarm when they feel like it, and you can't help it."

"Yes," said I, rather slowly and softly, for the deacon has the reputation of being rather set in his ways, and pretty quick-tempered as well. "Yes, we read in the first chapter of Genesis how, when the whales and every thing that moveth through the seas, and the fowls of the air, were created, they were told to multiply and replenish the earth; but nothing was said to the bees about it. Bees are not fowls nor whales, nor do they live in the sea."

The deacon is pretty well up in Scripture, and, quick as a flash, he said, "Wasn't Noah commanded to bring every thing out of the ark, the fowls and cattle, and every thing that creepeth on the earth, that they might breed and multiply abundantly? Doesn't that include the bees?"

"Well, deacon," said I, "I believe you are right; there is in bees an instinct or impulse to increase the number of their colonies by swarming. It is as much a part of their nature as it is to gather honey or care for their brood. And that's the mischief of it. Swarm they will. If our honey harvest comes with basswood we could get them up, old stocks and new ones, ready for it; but when it comes with raspberry and white clover, by the time the bees get ready to do much in supers the harvest is over. I believe some years I could double my honey crop if it wasn't for their disposition to swarm just as soon as there is any honey to amount to any thing, and sometimes before."

"That is so," chimed in Tim Fasset, who had come in unobserved, and was sitting on a nail-keg back of the stove. "I would give five hundred dollars for a breed of bees that wouldn't swarm. Down at Slabtown last year just as my bees began to work in the surplus boxes they began to swarm. We put back, and cut out queen-cells, and united, and changed places; but when the season was through we had only 500 finished sections and 2500 partly filled ones, fit only for the extractor. I tell you, we have got to get rid of this swarming some way."

"It can't be done; it's a natural instinct," said the deacon.

I don't know what he would have said further; for just then Dan Savage opened the door, and, before I had time to look around, began:

"Say, Uncle Lisha, you have got a hog-hook, I reckon, hain't you? I's killing my old Poland-China hog, and when we got him in the scalding-tub the hook gave way, and we all had to nerve to like Cæsar, to get him out. A pretty hot scald, I reckon. I tell you, them Poland-China hogs keep easy, and there is lots of money in them too I reckon. But you didn't tell me whether you could lend me a hog-hook."

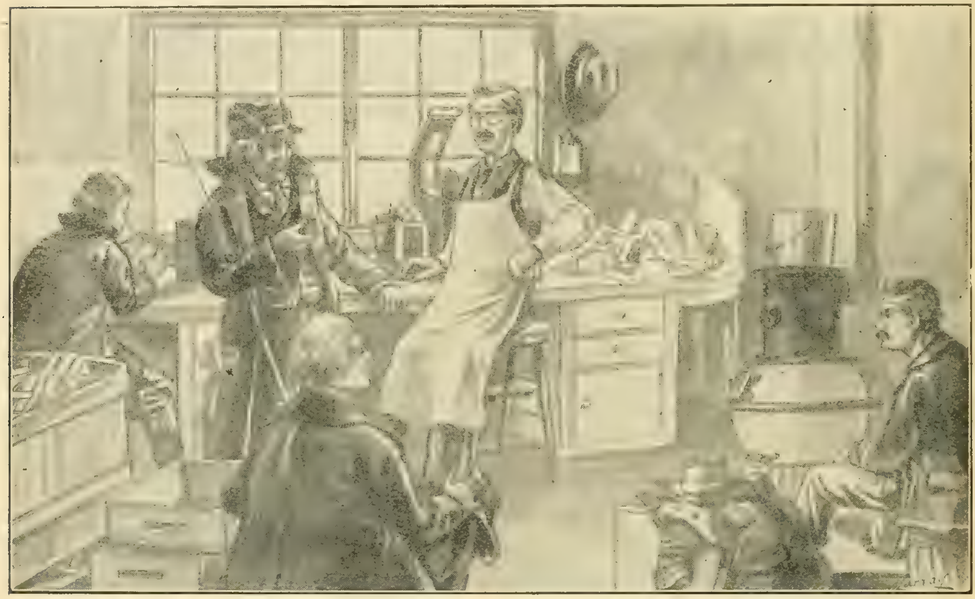
"No, sir, I could not," I replied, rather curtly. "I haven't a hog-hook nor a hog nor a hogpen, nor any thing that smells like one, around my premises."

"I reckon that's so," he remarked, as he turned on his heels and left. After the air had cleared a little I began.

"Now, deacon, I want to have a plain talk with you. It is a matter of a good deal of importance to a good many of us bee-keepers whether we are to have a breed or *strain* of non-swarming bees."

"It can't be done," said the deacon. "They were told to multiply, and it is a natural instinct."

"So is fear a natural instinct," said I. "Was not Noah told that the fear of man should be on the beasts of the field and the fowls of the air, etc? But we see when man tames them and domesticates them the fear is taken away. So the Lord gave sheep and cattle horns to defend themselves with; but when man destroys their enemies he can get rid of these unnecessary appendages."



"IT'S AGAINST BOTH NATURE AND SCRIPTURE. IT CAN'T BE DONE."

"I tell you," said the deacon, "it is against Scripture."

"Now, look here," said I. "Doesn't it say in that first chapter of Genesis that man was created to have dominion over the beasts of the field and the fowls of the air, and every thing? and he was commanded, not only to have dominion, but to subdue them for his own use; and you see how natural it is for man to have dominion and rule over the beasts and fowls and fish, and even his fellow-man. You see what immense herds of buffalo he has subdued. See how he has subdued the great whales in our northern oceans. My dictionary says, to have dominion means to have the power to direct and control and dispose of at pleasure. Thus a man has dominion over horses and cattle and sheep, and every thing he can make do as he wants it to. Yet a man can hardly be said to have dominion over a balky horse, or at least he can not be said to have subdued it" (I knew the deacon was a little tender on this point), "nor does a man have dominion over his bees if, when he puts on his supers for them to fill, they turn their backs to the supers and run away to the woods. Swarming was well enough in a state of nature; but when with improved hives we can increase our bees without it, why—it seems as though we, if we are to fulfill Scripture, should be able to direct and control them without their swarming. We can not be said to have subdued them till we have subdued their disposition to swarm. I tell you we must compare Scripture with Scripture if we would get its full meaning. Galileo you know, was persecuted because he taught that the sun did not revolve around the earth, when the Scriptures said the sun rose and set; and so of the geologists, and a great many others. I am willing to admit that the swarming instinct is a natural one and a very strong one if you wish; but I don't believe it can not be overcome, for we find it very variable. If some hives are full of brood and honey coming in even very slowly, they are liable to swarm; while if it is coming very fast, as likely as not they will refuse to swarm at all. If they have an old queen they may swarm if the hive is not half full of brood; but if they have a young queen, as likely as not they will refuse to swarm, even if every thing else favors. If they belong to the despised black race they may work right on, forgetful of the command to multiply; but if their ancestors came from sunny Italy it is more than probable they will believe in expansion, and may make a start before six o'clock in the morning, as I had several do one morning last summer.

"Now, I should like to know if this heaven-ordained instinct doesn't apply to all alike. I was reading only the other day in Langstroth's work, that, 'while some colonies swarm repeatedly, others, apparently as strong in numbers, and as rich in stores, refuse to swarm, even in seasons in all respects highly propitious'."

"That's so," said Fasset, from behind the stove. "We have got to get round it some way, and the quicker the better, and—"

Just here 'Squire Fullum walked in, and, with a hearty salutation, sat down near the fire to warm himself.

"Pretty cold day," he began, as he warmed up; "but the sun is getting up pretty well now, and it will soon be spring. I am in no hurry for it. I have got plenty of hay for my cows, and then I put ten acres of corn last fall into my silo, that will last till June. I tell you this ensilage is a great thing to make cows give milk in winter. I am making 35 pounds of butter a day, and it sells as quick as wink for 25 cts. a pound. Ours is a great State for dairying—a great State, I tell you."

I don't know where he would have stopped; but Jerry Benton came in just then. Now, Jerry is a sort of sport. Hoping I might do him good I tried to treat him very politely, and said, "Good morning, Jerry. You are quite a stranger. I haven't seen you in here in a long time."

"Well," he began, "I heard the deacon was in here, and I thought I would drop in and talk politics a little. Some of us are talking of setting up a license candidate for the legislature next fall, and I just dropped in to see how some of you felt about it."

"Let's see. Our State has now been under a prohibitory law for nearly fifty years," began the deacon, somewhat diplomatically, "and you license fellows have been pleading for a license law for a good many years too, because you said a prohibitory law wasn't enforced. During the last year it has been very thoroughly enforced, and now you want license more than ever. I have been thinking the matter over, and yesterday I took down an old dictionary that was my wife's brother's, just to see what license meant. The first word I found that began to look like it was *lice*. A little further down was *license*, and just below was *licentiousness*. When I saw that, I then and there made up my mind that, whatever virtue there might be in license, it had certainly got into pretty bad company."

"Hurrah!" shouted Esquire Fullam "I tell you, ours is the best State in the Union."

I am afraid some of the rest of us were more enthusiastic than polite, for Jerry just put on his hat and walked out without saying another word.

"I'm glad he has gone," said Tim Fasset, "for I had a great deal rather talk about non-swarming bees than license. Can you tell me, deacon, why it is that, when you use the extractor freely, bees swarm but little? Are they not commanded to swarm or multiply when the extractor is used as well as when sections are put on?"

I noticed, just as soon as Tim spoke of non-swarming, the deacon's eyes began to twitch, and his face flushed up until it was as red as a beet. I knew his wrath was kindled, and I was afraid he would say something dreadful; but he didn't. He was silent a few moments, and then, said he, "I guess I had better go and fodder. Betsey will be calling me to dinner pretty soon, and she says if I don't come in when she calls me the dinner will get cold, and be spoiled."

CONVERSATIONS WITH DOOLITTLE.

HIVES NOT ALL THERE IS IN APICULTURE; QUEEN-CELLS VS. VIRGIN QUEENS FOR NUCLEI; CARING FOR CELLS.

"Good afternoon, Bro. Doolittle. I called over to have a little talk with you about hives. I see by reading some papers that were lent me that, if I would succeed with my bees, I must adopt a hive patented by —— ———."

"Tut, tut, Bro. Smith! You ought to know better than to think, as some seem to, that large yields of honey are owing entirely to the style or patent of the hive used. This is not so."

"Don't the hives used have any thing to do with a large yield of honey?"

"Hives have something to do with the yield of honey, of course; but nothing as compared with a thorough knowledge of the location we are in, and an understanding of how to apply that knowledge so as to have the maximum number of bees at the right time, that they may secure the yield of honey when it comes."

"But will not the hives that are fixed in accord with the wants of the bees give this maximum number at the right time?"

"The manipulation of hives has more to do with our surplus crop than the hives themselves; for, no matter how good the hive is, if the combs are never touched, or the surplus room not put on at the right time, all may count for naught to the would-be bee-keeper, and the flowers bloom in vain as far as any profit to the user is concerned—a user who trusts simply to the merits of any hive, no matter how high-sounding a name it may have."

"Now, look here! Don't the hives used by Dr. Miller, Elwood, Golden, Root, Hutchinson, etc., give them the yields of honey they secure and report?"

"In order that no one should get the idea that the hives used and recommended by our best and most successful apiarists would give them thousands of pounds of honey without work, I have said, in concluding several of my articles in the bee-papers, that, if any one could not spend the time on bees which they require he had better keep out of the business."

"Is there nothing in what I have heard, that 'bees work for nothing and board themselves, where given a good hive for their home'?"

"I know of no hive with which a man can secure large results by simply folding his hands and letting the bees 'work for nothing.' Such is not the economy of nature; and in order to succeed in any calling in life we must put energy, industry, and perseverance into our work, if we would reap a harvest worth the gathering."

"Then must the bee-keeper work from twelve to sixteen hours a day, as does the farmer, to be a successful apiarist?"

"To work hard from twelve to sixteen hours each day, at mere physical labor, is not all that is required, as many assert by their actions, if not by words; but there must be an energy and push, mentally, sufficient to grapple with all of the unsolved problems which are in the way of our success. If these are all combined to the same extent that they are in other callings in life, there is no reason why bee-keeping will not give as good results for what is expended upon it as any other vocation which is honestly and economically pursued, even though it is not supposed to be thus by the majority of the world"

"Is it 'energy and push,' more than hives, which gives the large yields of honey reported?"

"I wish it might be understood that large yields of honey come not from hives, but can be secured only through an energy and push sufficient to bring large numbers of bees in a hive, and secure said large number of bees in time for the honey-harvest. In this lies the great secret of successful honey production."

"Then I am to understand that the hive has nothing to do with the matter of successful honey-production?"

"No, not just that. The hive whose every manipulation may be made with ease, and which is also perfectly simple, and well adapted to the wants of the bees and apiarist, may be made a great power in the hands of a man of energy and push toward rolling up tons of honey. But there are plenty of such hives now in use not covered by a patent."

"I suppose you would name the Langstroth as among that number."

"The Langstroth hive is certainly a good hive, and the frame principle in it is one of the best things that was ever given to bee-keepers —the same frame principle being that used in by far the larger share of the practical bee-keepers throughout the whole world. Did I have twenty or more colonies in the Langstroth hive, or in any of the many good hives of the present day, using that frame principle, I should rest content that I had as good hives, all things considered, as there were to be had."

"But would you try nothing else?"

"Only in a very limited way, till I had proven them superior. It is barely possible that, in the future, a better principle may be invented, but so far there never has."

"Then you would not invest in any patent hive so as to secure and hold certain territory in this State?"

"Well, no; not till I knew more about the matter than I now do. But here comes neighbor Brown. Undoubtedly he has some questions to ask. How do you do, Mr. Brown?"

"Fairly well to-day. I come over to have a little talk on queen-rearing. I read your article in GLEANINGS, page 175, with interest. But I wish to know further in the matter. Will you please tell me how to care for ripe queen-cells, and the virgin queens, after they are hatched, until they are wanted for the nuclei?"

"After trying all plans given, I have settled down to the conclusion that the best way for caring for ripe queen-cells is to make calculations to have nuclei ready to care for them just when they are ripe, so that the ripe cells are taken from the colony raising them and given to the nuclei at the same time."

"But suppose your nuclei are not ready for them."

"But I don't suppose any such thing The person who looks ahead and plans accordingly will not start the queen-cells till he or she sees in the near future the nuclei to put them in, just when they are ripe. Thus we have system about our work, and work with a definite object in view."

"Do you not keep queen-cells away from the bees till they hatch, at times?"

"I used to do this, and very many do it still; but if we wish the best of queens we will endeavor to have both cells and virgin queens so the bees have immediate touch with them at all times."

"Why, please?"

"After twelve to fifteen years of careful watching I have become satisfied that, for every day queen-cells or virgin queens are kept away from the immediate touch of the bees, especially the virgin queens, their life and usefulness are shortened at the rate of three months for every day thus kept away from the bees. Where just the right temperature can be provided, it does not seem to make so much difference with the cells; but I am quite positive about the young queens."

"Please explain a little more regarding this matter."

"About fifteen years ago I had a mania for introducing old virgin queens to nuclei, so that I might be able to send off queens to the trade much faster than by the cell plan, giving one of these old virgins to a nucleus at the same time that I took a laying queen away. Then I also sent virgin queens to other parties to have them mated and returned to me, and out of scores tried for the different purposes I never had one *single* queen thus treated live two years, while very many of my other queens, which were in immediate touch with the bees at all times, live to be four and five years old. At that time I had 'growls' from my customers regarding the short lives of some of the queens purchased of me; but since I adopted the motto of 'No queens but what the bees cared for *all* the time,' I have had no complaints of inferior queens in any respect."

"How is the looking-ahead part, you spoke of a little time ago, brought about?"

"First by knowing your location, so that you can be reasonably sure about when your honey-harvest will commence. Five to ten days before this commencing, you wish all of your increase made, and then is when you wish your laying queens to give the queenless part of your division. Then the ripe cell from which this laying queen emerged must be given to the nucleus twelve to fourteen days before she is taken out, if she is to lay enough in the nucleus to keep up its population; and the colony rearing the ripe cells started at queen-rearing ten or eleven days before the ripe cells are taken. Thus you have 27 days, previous to your expected honey-harvest, as the minimum time for commencing operations, and 35 days as the maximum time. I think you can catch on now. If you do not, come again and I will explain further; for it is now time that I go to the postoffice, so as to get an article out on this mail for GLEANINGS.

IT would seem, in view of the awful extent of adulteration being carried on in some sections of our country, as if more bee-keepers ought to turn their attention to comb honey. The general public in many localities is afraid of extracted honey; and, in fact, much that they do eat is not honey, but a very poor imitation.—ED.

HEADS OF GRAIN FROM DIFFERENT FIELDS

[I solicit questions for this department; but they must be put on separate slips of paper, and marked "GLEANINGS Department." If you desire an immediate answer, say so at the time of writing, and a private reply will be sent you in advance before your question with answer appears in these columns; but questions that are mixed up with business matters will not only be subject to considerable delay, but possibly will receive no answer at all.—EDITOR.]

BEES ON THE HIGHWAY.

I have some bees, and they are close to a public pike, and some have told me if I had any trouble with teams passing that I would be good for all damage. Will you give distance they would be clear of the pike?

Bradford, O., Mar. 14. H. E. WILLIAMS.

[I do not believe there is any law specifying distance that bees should be from public highway; but to avoid trouble with passersby I would suggest that, if you have the room, you place the bees in the back yard, or as far from the highway as possible. If you have not the room, then leave the bees where they are; but be careful about stirring them up so they will be cross. A high board fence or a hedge of good height between the bees and the highway would avoid most of the trouble; but, better still, put the bees at least 100 feet from the road if you can.—ED.]

DISPENSING WITH WIRES; FASTENING FOUNDATION TO THE TOP AND BOTTOM BARS.

While putting in some foundation the other day I thought of a plan that might help you. May be you have already tried it. Suppose you make the bottom-bar of your frames a little thicker, and put a groove in it as well as the top-bar, leaving out one end piece, and sliding the sheets of foundation in it as you would a glass pane, and then nail on your end piece. Don't you think that would save wiring them? or would they sag in the center?

DAVID TAYLOR, JR.

Laurel Hill, La., Apr. 5.

[The foundation put in as you describe would sag in the center. You can not avoid the use of wires, splints, or some sort of support if there is a bottom fastening as well as at the top. If there were a wide saw-kerf clear through the bottom-bar, so that the bottom edge of the foundation could work through easily, allowing for stretch, you could secure a bottom and top fastening without sagging.—ED.]

BLACK BROOD IN MICHIGAN.

Having read Dr. Howard's article in GLEANINGS I have found out what is the matter of my bees, for that is just what it is — black brood. I have had it for six years, more or less. I sent you specimens during this time to see what the trouble was. You always said *not* foul brood until last year when you decided it was; but I was not yet satisfied, for it stayed too long in the hive. I have one now.

It was in 4 years last summer, and they went into winter fairly well. I destroyed a number last season, and melted the combs of 42 hives, boiled the frames and hives, but not in *linseed oil*, and expect to use them this season.

NELSON DEWEY.

Birdsall, Mich., Feb. 22.

HOW TO GET CANDIED HONEY OUT OF COMBS; HOW TO DO IT WITHOUT MELTING COMBS AND HONEY; A VALUABLE SUGGESTION.

I notice in a late number of GLEANINGS where some one asks how to clean candied honey out of brood-combs; and the answer given is, "There is no way except to melt them."

In the winter of 1898 I had over 100 combs well filled with honey that I had put away for spring feeding. The honey in these combs candied. I think this was due partly to their being stored in a very cold place, and this honey was what we call "alfalfa" honey, which seems to candy more quickly than other sorts. Well, I did not like to melt the combs, so I thought I would experiment a little. I uncapped some, and then, filling a large tub with cold water in which I put about a quart of vinegar, I filled it with combs, put a weight on to hold them down, and left them 24 hours, when they came out as clean as ever —no honey, no pollen. They were a little *sticky*, but I hung them in some empty hives, and the bees soon cleaned them up. I used the one tub of water for all the combs. I cleaned about 150, and then put the honey and water into the vinegar-barrel. I am positive this plan will work every time.

Ft. Collins, Col. MRS. J. M. MCLEAN.

[This is indeed a valuable suggestion; but, say, do you suppose the vinegar had any direct influence on getting the honey out? Would not the combs have been emptied just as soon without the acid? I don't know, and simply ask for information.—ED.]

HOW TO ITALIANIZE AN APIARY WITH TWO QUEENS; HOW TO RAISE CHOICE DRONES.

On account of being so busy with other work I have neglected to keep my bees pure, so I am now entirely out of a pure colony. I want to Italianize them this summer, but am not able to buy queens for all of them. I thought my best way would be to buy two queens not in any way related, and raise my queens from one and drones from the other to fertilize those queens. There would be no inbreeding in such a case. Will you please advise me as to the best way to go at it to get this queen to raise drones and have them in readiness along at times as I might need them? I understand it is difficult to get a young queen to raise drones. A clipped virgin queen might do all right, but in giving the bees frames of brood along at times to keep the colony in good working order would not the bees persist in building queen cells, and destroy this queen? and wouldn't she lay her drone eggs in this worker comb, which would raise dwarfish, worthless drones for my use? Tell me the most reliable certain way you know of, and whether you would risk only the one queen for the whole business, and how old it is best for her to be. Perhaps a pure drone-laying queen would be best for me.

JOHN R. MILLARD.

Flagler, Iowa, Apr. 10.

[You can Italianize an apiary with two queens of selected stock, one to raise the daughters and the other the drones; but unless the queen is a year old, and unless, too, you supply her with plenty of drone comb, feeding the colony a little every day when honey is not coming in, you would not secure very many drones. Of course, you understand that you would have to trap the drones of all other colonies, with perforated zinc, or, better, Alley traps, or, better still, give each black and hybrid colony nothing but worker combs. Even then it may be desirable to have perforated zinc over the entrances of all such hives.

The problem of making some choice queen and her colony rear a large lot of choice drones, just at the time we want them, is not an easy one to solve. To get a sufficient number of drones, it might be necessary to have several queens, all of whose colonies were supplied with drone comb. A drone-laying queen —one that has been a good queen in her day, and whose *workers* were uniformly well marked, and desirable in other respects, might afford the easiest solution of the problem, but it would be doubtful if it would be wise to clip an average virgin queen and compel her to go into the business of furnishing drone-eggs. In the first place, you can not determine a queen's purity by the markings of her drones. While the male bees vary greatly, the worker bees should show at least three yellow bands.

Yes, the bees would try to raise cells where there was a virgin that had laid only drone eggs.

It may be the time will come when a drone-laying queen will have a market value. We have seen the time when we would have given more for one of them than we would for two or three high-priced mothers of good workers. In the fall of the year it is difficult and almost impossible to get a normal queen, even by stimulative feeding, to lay eggs in drone-cells. She seems to know that cold weather will soon be on, and that it is not the time for that sort of business. For late laying of drone eggs we have had to rely something on drone-laying queens, and even those from virgins; but we do not like to use these latter if we can avoid it.—ED.]

REARING DOOLITTLE CELLS IN BROOD CHAMBER.

Will you please tell in full, as soon as possible, about rearing queens in Doolittle cells in brood-chamber, as you practiced last season? Is it successful?

Pearl City, Ill., Mar. 21. E. J. B.

[This matter is very fully explained in our issue for July 1, 1899, page 510. In a word, the important requisites are these: Stimulative feeding (i. e., half a pint of sugar syrup daily), and placing the cells to be built, in the center of the brood-nest surrounded by perforated zinc; for the queen of the colony must not have access to the cells or she would soon destroy them. Your question, I take it, implies that you desire to know how to rear Doolittle cells in the brood-nest of a normal colony having a queen. Of course, it is no trick at all to raise a kind of cells in queenless colonies without even feeding. Such cells do not produce as good queens by a long way as those reared under the swarming impulse or stimulative feeding. To fence the comb having Doolittle cell-cups off into a compartment by itself, we have two tight-fitting division-boards of perforated zinc that reach to the bottom-board clear out to the ends of the hive, and reaching up to and in contact with the cover above. A frame of unsealed larvæ, or two of them, preferably, are placed, one on each side of the frame, with cell-cups; then the perforated zinc division-boards are set down in the spaces that will inclose these three frames off by themselves. The queen is given the range of one or the other sides of the brood-nest. After the first batch of ripe cells is taken out, she is transferred over to the other side, and then the operation is repeated as before. But I desire again to lay very great stress on the *stimulative feeding*, and on the frames of unsealed larvæ being placed as indicated, and, when possible, securing as strong colonies as can be had at this season of the year.—ED.]

TRANSFERRING AND PUTTING BROOD ABOVE PERFORATED ZINC.

I have purchased 20 colonies of bees in Langstroth hives, and in about two weeks intend to transfer them to Dovetailed hives. I want to use full sheets of foundation (wired). How will it do to place the frames containing brood and eggs in the upper story, with a queen-excluder between, until the eggs shall have hatched? W. S. HOSS.

Indianapolis, Ind.

[If colonies are already in movable-frame hives from which they are to be transferred, it is usually the practice to put all combs containing brood in an upper story above a sheet of perforated zinc. When the brood hatches out, then the combs are cut out of the frames. If the bees are in box hives in the first place, they should be drummed out, and old combs containing brood should be left in the old hive beside the new one, till all brood hatches; then all old combs may be cut out and melted up. But box hives, when set down beside the other hives, should have their entrances at right angles; or it would do no harm if the entrances were reversed, one pointing in one direction and the other the direct opposite.—ED.]

NEW HONEY FROM THE TI-TI.

I visited an apiary this morning, and the owner had just finished hiving a swarm of bees. He said, "I threw water upon them, and they soon settled." They clustered upon a mulberry-tree, which was full of green fruit. The bees are diminutive blacks, kept in movable-frame hives. This apiarist reports the season late, as bees usually swarm in March. There had been much honey-dew, but now bees were gathering very nice white honey from the ti-ti. He had twelve colonies—sold some honey in the town, and used a good deal himself when he had no sugar—sweetened his tea with it.

There was no orange or lemon bloom this spring, as frost destroyed the foliage, and in many instances the wood. There is one tree in our garden that is now clothed with leaves to the very tips, while all the rest were killed to a few inches from the ground. An orange-tree will bear more neglect than any other tree, but can not endure severe freezing. The thermometer was down to 17 degrees above zero the past winter. A year ago the past winter I celebrated arbor day by planting an orange-tree. It was killed down, and never sprouted from the root the past summer. I utilized the spot, as it had been well fertilized, by transplanting a small peach-tree. To day on visiting the spot to look after the peach-tree I was surprised to find a small orange-tree, six inches high, which had grown from the root, after lying dormant more than a year. MRS. L. HARRISON.

St. Andrews Bay, Florida.

QUEENS; THEIR MYSTERIOUS DISAPPEARANCE EXPLAINED.

On page 686, 1899, is an article from J. E. Gauger, stating that he lost about one-fifth of his queens, and you called upon your readers for help. Well, it seems that he and I are about all that have had such experience. I think, however, I know what became of mine. Early in the spring, when I first began to examine the condition of my bees, I found a queen on the under side of the cover, and it was by accident that I saw her. A little further on a queen was on top of the frames; and, when I smoked her a little to drive her down, she ran over outside. On another occasion I had some work to do with a very cross colony, and it took considerable smoke to subdue them. About an hour afterward I found the queen about a rod from the hive. Another time I was looking for the queen; and, after looking through the whole hive except the last two frames, I found her balled by the other bees. If I had not been hunting the queen herself, I would perhaps have had a queenless colony without knowing what became of the queen. On taking off supers I frequently found queens which might have been lost had I not been looking closely for them. I lost several queens, any way; but by learning early to be on my guard I saved many that otherwise would have been lost. I am pretty sure all the missing queens were lost in one of the above-named ways. It was by learning early in the spring to watch that my per cent of loss was not as great as was Mr. Gauger's.

Delray, Tex. J. T. ETHERIDGE.

BEGINNERS' QUESTION-BOX

BY E. R. ROOT.

L. H. W., Mo.—A nucleus hive may be placed in an exhibition window in a store, without any entrance to the outside. The bees may thus be confined for four or five days or possibly a week; but it is better at the end of that length of time to give them a flight of a day or two, or, better still, change the bees entirely. If the entrance can be arranged so as not to interfere with passers-by on the street we would advise giving the bees communication to the outside. They could be thus kept day after day without any change.

T. R., Hawaii.—From the brief description you have given in your letter of the affected bees, we should say they have what is called bee-paralysis. We know of no cure for it; and if it once gets started in a warm country it is liable to be very destructive. We would advise you to remove all diseased colonies to a location where the bees can not get near any others. Destroy the queens of the diseased stocks, and introduce in their stead queens from healthy stocks. This may be the means of bringing about a cure. If this does not give relief you had better destroy the bees and combs, and boil the hives for an hour at least, to disinfect them.

M. W. M., Ill.—If you have a surplus of extracting combs or brood-combs filled with honey, and capped over, you will find these your best stock in trade. They are very useful in giving to colonies short of stores in the fall, in the spring, or even in mid-winter. Of course, if you have too many of them, and desire empty brood-combs to give to the bees, then we see no other way than for you to buy an extractor with which you may empty out the surplus combs. In an apiary of 100 colonies we consider 100 extra combs filled and capped over as the very best kind of capital. They save a lot of feeding, and are so handy that they can be used any time without discommoding the colony.

E. P., Ind.—During winter there is apt to be a good deal of dampness in the hives. It is caused by the fact that the inside temperature of the hives is much warmer than the outside; and as warm air holds in suspension a large amount of moisture, when it strikes the cold sides of the hives it condenses and runs down just as water condenses and runs down the sides of a pitcher containing ice water on a hot summer day. This condensation amounts to considerable — sometimes so much that the water will run out of the entrance. Ordinarily it does no harm unless this condensed moisture gets into the packing materials or cushions, causing them to be damp and soggy. All such should be removed and dried out the first bright day of sunshine.

J. R. T., Iowa.—For Italianizing the most economically by starting with one good tested queen, we would refer you to the plan mentioned on p. 32 of our catalog. You can not very well raise pure Italians with common blacks or hybrids in the same yard unless you use perforated metal entrance-guards or Alley traps to kill off the drones of the black and hybrid colonies. For particulars regarding entrance-guards, etc., see p. 21 of our catalog, and also p. 32. If your neighbors have black or hybrid bees within a quarter or half a mile you will need to put entrance-guards over their colonies; for the bees will cross, even if the separate hives are half a mile apart, and, to a limited extent, even when a mile apart. For full particulars see "Drones," also "Queen-rearing," in our A B C book. There must be some mistake about two bees eating 2 lbs. of honey over winter. That is utterly out of the question. No doubt the man who reports it is honest, and believes it to be true, but he is surely mistaken. There are something like 4500 bees to the pound, and 3 lbs. to the colony. Such a colony will consume over winter, during the time named by your friend, not more than 10 lbs. of honey. According to this, 1 lb. of honey would support 1350 bees, so you can see that the statement of your friend is clearly out of all bounds of reason.

J. A. M., Pa.—Referring to the time it takes a bee to fly half a mile, gather a load of honey and return, I would state that it varies greatly. The flight of the bee going to the fields is about 15 or 18 miles an hour; and its return, if heavily laden, from eight to twelve. These rates will be varied a good deal according to the wind, and according to whether the bees are working on basswood or white clover. If on the latter, they might take, and probably do take, 20 minutes to an hour to gather a load and return to the hive. Experiments have shown that bee-loads vary considerably. Prof. Lazenby, of the Experiment Station at Wooster, O., has found from experiments that the average load of nectar carried by the bees is .022 of a gram, which is 27 per cent of the average weight of a bee, or a little over one-quarter of its own weight. If, on the other hand, the bees were robbing a neighbor's honey-can, half a mile away, they might go in seven or eight minutes, assuming that the average flight was at the rate of about a mile in five minutes. If the bees are gathering from basswood or some other plant where there is a large supply of nectar in a single blossom, the time might be about half that for gathering a similar amount from clover. Referring to your question as to when bees gather water in the spring, that takes place as soon as settled warm weather comes, and when the bees are at work on the pollen. The length of time on these trips, if they went half a mile, might aggregate anywhere from seven to ten minutes. These figures, except those from Prof. Lazenby, are not taken from actual observation, and timed visits, but are only approximate estimates based on bicycle-runs when I have chased bees up the road. I have ridden a wheel so much that I can form a pretty accurate idea of my speed, and bees will very often "take to the road" to avoid rising over shrubbery and trees when the pasture and the hives are in a bee-line with the road, as happens to be the case with our out-yard.

EDITORIAL
BY
E. R. ROOT

THE Brosius pure-food bill, a measure that is of vital interest to bee-keepers, is now in the committee of the House, and will probably be reported in some form in a few days. Mr. Abbott, our delegate from the National Bee-keepers' Association to the Pure-food Congress, requests that all bee-keepers write to their Congressmen, urging them to support the bill when it comes up for vote. Undoubtedly the glucose interest will have a strong lobby against it, and bee-keepers should help to offset this by writing at once to their Congressmen.

CANDYING NOT A PROOF OF PURITY.

AFTER the article by S. T. Pettit, on p. 340 was made up and in the forms, I noticed there was one very important matter which I did not refer to in my footnote; and that is, as to whether, when honey is "candied solid," it is "absolute evidence that it is pure." Taking this statement just as it stands, it is not; but if the statement is taken in connection with what I said on the same page, one will understand that glucosed honey will candy clear through the mass; but it has a very different appearance from pure candied honey. The greater the amount of glucose, the less the tendency to candy; and the greater the amount of pure honey in proportion to the adulterant, the more compact and solid the mass of granules. I agree with Mr. Pettit in all he says. This article is one of the best we ever received.

THE FOUR CLASSES OF SOILED SECTIONS.

DR. MILLER has already spoken of the confusion that seems to exist over the question of travel-stained, soiled, yellow, greasy, or water-soaked sections. All of these terms have often been confounded for one and the same thing. There are really four classes of discolored sections, each due to a distinct and separate cause. First, there is what is called the real travel-stained section. As its name indicates, the cappings are soiled because the bees have gone over the surfaces of the cappings with their dirty feet.

Then there is another lot that are stained because the boxes are capped over in the vicinity of old comb, dirt, or propolis. If the faces of such sections are examined carefully it will be found that the stain or discoloration goes *clear through*. These discolorations are due to the fact that the bees take up pieces of old black wax, propolis, or any thing that will answer as a substitute or filler for pure wax. I have seen the cappings of some sections of this sort filled with bits of old rope, lint from newspapers, small hard chunks of propolis, fine slivers of wood—any thing and every thing that is right handy. Sections of this class often look like those of the first class, hence the frequent confusion.

In the third class are those with soiled cappings, due to pollen dust or possibly a thin layer of propolis stain. All such may be bleached white, as explained in our last issue, but the other two are hopelessly beyond remedy. All white honey with yellow cappings is apt to be in the third class

The fourth and last class takes in all those that are called "greasy" or "water-soaked," having cappings that lie on the honey. The covering to each cell is more or less transparent, or water-soaked—the transparent part being half-moon shaped, or in the form of a ring encircling a white nucleus center that is not greasy or transparent. The general surface of such sections is mottled with little transparent half-moons or circles over many of the cells.

If the reader will look over the unsold odds and ends of the grocer's he will be able to find samples of all these classes, and it is a good time of the year to find them, as they are the last to sell.

LARGE HIVES AS NON-SWARMERS, AND ADAPTED TO COMB-HONEY.

IT will be remembered that for years the Dadants, the well-known foundation-makers of Hamilton, Ill., were almost alone in the championship of large colonies in large hives, maintaining that they wintered better, gathered more honey, and were practically non-swarming. Some years later, having made some experiments that seemed to prove the value of large brood-nests, the editor of this journal had the audacity to say a few things in their favor. At the time quite a number admitted that, while they might be excellent for *extracted* honey, insisted they were not suitable for *comb*. But a few took the position of the Dadants and myself.

Very recently it was no little pleasure to read an article that seems to be quite in line with my experience on the subject of large versus small hives, by H. H. Hyde, in the *Progressive Bee-keeper* for April. From this article I have made the following extracts:

> I am a large-hive man. I believe in strong colonies at all times of the year. Large colonies not only gather large quantities of honey, but also require much less work and attention. Now, right in line with strong colonies comes the importance of good prolific queens to fill the large hives, or barns, as some call them. . .
>
> I wish to say that I was not a large hive advocate from the start; in fact, I have had it almost pumped into me little by little, for we (O. P. Hyde & Son) started with 8-frame hives, using one story, and now have 300 of our 500 colonies in 8-frame hives, but we have just that many more than we want. Still we make large hives out of them by giving the queen access to two or more stories, according to the number she can occupy. And, too, we run two-thirds of the bees in each apiary for comb honey during our first flow. This manipulation I have several times before explained, notably for last May and June. . .
>
> While it is a fact that it takes more honey to run large colonies, it is also a fact that they will store much more surplus, very much more, than small colonies, even much more than proportion to the number of bees.

I have spoken of "Draper barns." It might be well to state to some of our later readers that these are nothing but ten-frame hives 2⅛ inches deeper than the regular standard Langstroth. These hives, also designated as "Jumbos," with deep frames, make very little confusion in the apiary, because they use the same bottom-boards, same covers, same sections, and same section-holders, that are used in the regular ten-frame Langstroth hives; and such great cards of brood as one can get from these big frames!

It is but fair to state that these "Jumbos," probably, would not be adapted for some localities, and for some bee-keepers. Every one should experiment for himself on a small scale, and then, as results seem to justify, adopt that which will give him the most *money* (not necessarily honey) for the amount of labor and capital employed.

SALOONS DRIVEN OUT OF MARENGO, ILL., THE HOME OF DR. MILLER.

When I called on Dr. Miller two weeks ago I happened to make my visit at just the time when they were in the midst of a campaign to oust the saloons from Marengo. It seems that that beautiful town, with its fine and modern churches and its large numbers of church-going people, was caught napping about two years ago, for the town went wet by the bare margin of just *two votes*. Some temperance people voted with the wets, thinking that a tax of $1000 on the saloons would be practically prohibitory, and bring to the town some revenue. What was the result? In a year's time there were five saloons, all paying the tax, some of them having elegant bars, and all doing a big business. Young boys from respectable families were learning to drink; men once sober were becoming drunkards; bad debts were being made at the stores simply because the money had been expended for liquor at the saloons; brawls and fights were not infrequent on the streets, one man being killed recently; wines and liquors were being drank in private homes.

The Sunday that I was in Marengo I had the pleasure of being present at a meeting of some 50 or 75 business men who had assembled after a general temperance meeting to discuss ways and means to drive saloons out of the town that had been dry for thirty years previously. They seemed to feel that an awful calamity had visited the place, and that there should be an organization formed to vote the town dry at the election to be held April 17.

Being desirous of knowing the result of the vote I asked Dr. Miller to wire me if it went dry. This morning, the 18th, I received a message, dated yesterday, which reads as follows:

> All three wards, no license. Hallelujah! Rejoice with me. C. C. Miller.

While this is somewhat aside from the subject of bees, yet as it relates so intimately to one of the most prominent bee-keepers of the world, I know our readers will be glad to hear of the result, and rejoice with him.

Sometimes good temperance people think it is better to have an open saloon or two, with a high tax, so the money can go to the building of roads, waterworks, or other improvements, rather than have speak-easies running on the sly, and get no revenue. In the days of no license, Marengo, I understand, had two speak-easies, but no boys could get any thing, and very few men, and these had to belong to the "mystic circle" in order to know how to "pull the ropes;" and yet the cry was raised two years ago at Marengo that there was as much liquor drank as there would be if there were saloons in the town paying license; but the results have shown the utter fallacy of such a statement. It has proven true in every town where the experiment has been tried, and no one knows it any better than the saloon-men and the brewers and liquor-men in general.

BEES AND HORTICULTURE; THEIR RELATIONS MUTUAL.

The above is the title of a pamphlet issued by the National Bee-keepers' Association, and edited by General Manager Eugene Secor, of Forest City, Iowa. The purpose of this pamphlet is set forth in the title summary as follows: "To put into condensed form, for the use of bee-keepers and fruit-growers, such information as is at hand, derived from experience and recent investigations, relating to the economy of nature in plant and insect life, and to show their mutual interdependence." It contains a digest of all the best articles that have been published, including the reports from government bulletins and experiment stations, all going to show the value of bees as distributors of pollen, thus making it possible to secure more and better fruit. It also takes up the question of spraying fruit-trees, when to do it, how to do it, and how to prepare the mixtures. It counsels fruit-men *not* to spray the fruit-trees that are in bloom; proves by plenty of evidence that doing it at such times is not only unnecessary but a dangerous practice, an injury to the blossoms, and often a misdemeanor.

On the last page or so there are given copies of the laws in several States, regulating spraying fruit-trees, especially those laws that make it a misdemeanor to spray trees while in bloom.

This, as I understand, is only one of the series of pamphlets that will be issued as time and money will permit and conditions demand, and will be used for the benefit of members.

The National Bee-keepers' Association, as Mr. Secor well says, was organized "for the protection of bee-keepers' rights and interests, and for the diffusion of knowledge pertaining to the honey-bee and its importance to agriculture and horticulture. It stands for the pure-food idea, and is ready to prosecute the adulterators of honey." The annual membership fee is only $1.00, and yet as I look at it the Association, or what has been the Union, National and United States both, has been worth thousands of dollars to bee-keepers over the country. The old Union secured many valuable precedents in law to prove that bees are not a nuisance *per se*. The new Union began the work of fighting adulteration, one of the greatest evils that bee-keepers have to contend with at the present day and age; and I have already seen the salutary effects of the work of the Union, or Association, as we now call it. Its delegate to the Pure-Food Congress was appointed on important committees, and bee-keeping is now recognized as it never was before. I have already referred to the fact that the Association in Chicago is already being regarded by the Chicago adulterators with a wholesome respect.

As the months roll on I believe bee-keepers will have great cause to congratulate themselves that so strong and effective an organization is doing such splendid work, and that, too, without a dollar of government aid or assistance from any State. Why bee-keepers, many of them, and progressive ones, too, are holding back their dollars, is somewhat of a mystery. The membership, if I am not mistaken, is a little above 500; but it ought to be 5000, and then, my, oh my! the adulterators would be scrambling to get out of its way. If they scramble now in some sections, what would they do if we had a larger membership and a larger financial backing? I have always spoken a good word for the Association, and I shall keep on doing so until the *progressive* ones see the advantage of pulling with their united strength.

STANDARD SECTIONS, AND THEIR AVERAGE RELATIVE WEIGHTS WHEN FILLED WITH HONEY.

THE same size of section when filled with honey varies in weight from year to year; but last year Dr. Miller found that the 4¼x4¼x1⅞ beeway ran a trifle under 15 ounces, or exactly 14.94; the 4¼x4¼x1½ plain averaged a little under 14 ounces, or exactly 13.83. It has been claimed that the 4x5x1⅜ plain averages a trifle over 15 ounces, and, when well filled, an even 16. I was not a little interested in a comparison of the figures showing the cubical contents of each set of sections.

The 4¼x5x1⅜, taking the outside dimensions, has cubical contents of 29.22.

The 4x5x1⅜, 27.5 cubic inches.

The 3⅝x5½, 27$\frac{3}{16}$.

But there is a greater difference in *the ratio* of the *inside* cubical contents because the sections are ⅛ thick; and therefore to get the exact figures we should deduct ¼ inch from the perpendicular and horizontal dimensions—the thickness in every case remaining the same. The figures will then stand as follows:

4x5x1⅜, 24.5 cubic inches.

3⅝x5x1½, 24 04.

4¼x4¼x1½, 24, even figures.

Understand that the figures given above are all for *plain* sections, which allows for ⅓ of the bee-space being in the sections and ⅔ of it in the fence.

Going back to Dr. Miller's data for the 4¼x4¼x1½ plain, we find that 345 such sections averaged up each 13.83 ounces. As the 3⅝x5x1½ has the same exact cubical contents within .04 of a cubic inch, we would naturally suppose that that section would hold the same amount as the 4¼x4¼ plain, or a trifle under 14 ounces. I do not know now just where to look for it, but I believe some one has claimed that, notwithstanding the cubical contents of the two sections were the same, the tall box was a trifle lighter when filled with honey. This might be accounted for on the ground that there is slightly *more margin* in a tall box for the same contents than in one that is square. The more margin, the more shallow or partly built, or uncapped cells, and hence a corresponding reduction in weight.

As the 4¼x4¼x1½ plain, according to Dr. Miller's figures, hold—say in round numbers—14 ounces of honey, and as there are 24 cubic inches to that size of section, then one cubic inch holds $\frac{7}{12}$ of an ounce of honey. But we could hardly use this ratio when we compare a square with a tall box, on account of the difference in the length of margin around the honey, although approximately it might give us a fair idea.

I have given this set of figures in the hope that our readers will weigh up their sections this summer, and then divide the total weight by the number of sections to get at the average. Furnish us with the sets of data so that we may know how these averages run in different localities and under different managements.

In the mean time I may call attention to the fact that the 4x5 is supposed to run more nearly a pound than any other section on the market, and yet it actually holds only ½ of a cubic inch more than the 4¼ plain. If we add $\frac{7}{24}$ ounce to the 13.83 ounces, the 4x5, theoretically, would hold just 14.12 ounces, which would make it considerably lighter then than the 4¼x4¼x1⅞ beeway; but the actual results show that the 4x5x1⅜ plain runs little heavier. It must be admitted there is somewhat of a contradiction between cubical contents and actual weights themselves in honey.

Why the 4x5x1⅜ should average so much heavier than the 3⅝x5x1⅜ or 4¼x4¼x1⅜ when there is practically only ½ cubic inch difference is a little hard to understand, because we have figured that a cubic inch holds about $\frac{7}{12}$ ounce of honey.

A 4¼ plain by 1⅝ holds a good plump pound, and we supply such sections to Geo. E. Hilton and others. To make the 4¼x4¼ plain hold as much as the same section beeway, we should have to make it about 1$\frac{9}{16}$ inch thick instead of 1½; but in doing that we find a difficulty in getting six rows of sections in the ordinary super, and leave room enough for a fence on the outside of each outside row.

SNAP SHOTS FROM THE CHICAGO CONVENTION; QUALITY OF SWEET CLOVER HONEY.

QUITE an animated discussion took place at one of the sessions in regard to quality and quantity of sweet clover produced in and about Chicago; for it transpired that a very considerable portion of honey produced in the city limits was of that kind. Some likened the flavor to vanilla; others thought it had a disagreeable tobacco twang. Some thought it an excellent honey, and others were very sure that it ought not to be put on the market as first grade; but nearly all agreed that a small amount of it mixed with other honeys was not detrimental but rather an advantage to the flavor.

I noticed in Colorado that alfalfa honey having a slight flavor of sweet clover was very pleasant and agreeable to the taste. Indeed, I formed a strong liking for it, and now try to keep it in the house as a choice tidbit for my bee-keeping friends.

It was developed, also, at the Chicago convention, that sweet clover is "awful stuff" if it is not thoroughly ripened; but when the bees have had a chance to manipulate it, and it is taken out of the combs good and thick, it was considered not unpleasant, although a little strong compared with basswood, clover, and other mild-flavored honeys.

ALFALFA HONEY NOT TAKING WITH THE CITY TRADE, AND WHY.

There seemed to be a general agreement that alfalfa honey—that which I have praised so highly in these columns, and which in my humble opinion I have classed as the finest honey in the world—did not take well with consumers, for the simple reason that they were in the habit of tasting clover and basswood; and if the flavor of these honeys were lacking, then it was declared to be nothing but sugar syrup. Alfalfa is so mild-flavored that a good many of the Chicagoans regard it with suspicion because it does not taste like the honey of their fathers. One dealer in the city, I found, was putting into alfalfa a small amount of strong-flavored fall honey; but this, for me, spoiled it, and yet it was done to give it a taste and twang that satisfy many consumers.

The general public has been fooled so much that it does not know what to accept as pure; and whenever honey is too mild-flavored or too strong or too something it is pronounced adulterated; and I do not know that we as bee-keepers have any right to blame them. The markets in Chicago have been flooded with adulterated goods, and no wonder the people of that town look with suspicion on almost every thing bearing the name honey.

ARRANGEMENT OF HIVES IN AN APIARY.

Quite a lively discussion arose on the arrangement of hives in the apiary. It transpired that a majority put one hive in a place; but Dr. Miller emphasized the importance of grouping the hives or placing them in pairs. It is his practice to put two hives on one stand, both facing the same direction, and the hives about two or three inches apart. Said he, The bees of one hive on a stand never get confused and go in the next hive on the same stand. If there is any confusion at all, it will be from bees going to the next stand in that hive that occupies the same relative position; but by placing one stand near a tree, and another one out in the open, and the next one near a bush, and so on, no confusion would be noticed. It was also pointed out that it was convenient to have two hives together, as a person could sit on one while he was working at the other, or he could use one as a sort of table or bench on which he could lay his tools, such as smoker, etc., while working the other.

It is our practice, when we can, to place five hives in a group. In this way we save a great many steps, and at the same time crowd a large number of colonies into the same space.

BALDRIDGE'S METHOD OF EQUALIZING COLONIES.

At one of the sessions Mr. Baldridge described his method of equalizing colonies—a method I do not remember seeing described before; but Dr. Miller assures me that years ago a great deal was said about it. It is this: About six week after the bees have been set out of the cellar he exchanges the strong colonies for the weak ones; i. e, he places a strong colony on the stand of the weak one, and the weak one on the stand of the strong one; and although he says he has practiced this for many years he has never lost any queens, as one would naturally suppose he would after such a mixing of bees. The advantage of the plan is that equalizing strength of colonies is very quickly performed, and there is no general disturbance of the brood-nest.

But if I remember correctly it has been generally considered that the strengthening of weak colonies, at the expense of the strong, is not good practice, for the reason that it is the big colonies that really gather the honey; and unless they are up to a certain strength they will not do very much in the supers; and the consequence is, if all colonies are evened up in strength there will not be as much honey as if the strong stocks were allowed to have their strength and the weak were made to do the best they can under the circumstances. But this plan of Baldridge's may deserve at least a trial.

SPREADING BROOD CONDEMNED.

In this connection the question of spreading brood in the spring was considered; but nearly every one thought this a doubtful practice. While experts may do it with profit, the average bee-keeper was counseled to let it alone, as it is liable to result in chilled brood, and possibly foul brood, if the germs of it are in the yard or apiary.

THE CHICAGO JOINING THE NATIONAL.

At the last meeting of the Philadelphia convention a clause was inserted in the proposed constitution by which any local society, State or county, might join the National Bee-keepers' Association, on payment into the National treasury of 50 cents per member, *providing* that such members *went in a body*. It was urged by Mr. York, who proposed the insertion of this clause, that we could thereby secure more funds and more members—members who would not otherwise come into the Association; and so far the results in practice are as good as they were in theory. Quite a number of associations have already joined the National. At a meeting of the Chicago convention this matter was discussed quite thoroughly. Finally it was voted to join the National Association in a body.

This action on the part of the Chicago Association entitles all the members of that organization to all the privileges and benefits of the National, and at the same time they do not lose any of the benefits accruing from membership in the local organization. In the case of the Chicago Association the membership fee is $1.00, and it would cost $1.00 to join the National as an individual member; but by voting to join the National in a body, that same dollar extends their privileges to those of the National.

OUR HOMES,

BY A. I. ROOT.

And he said unto them, This kind can come forth by nothing but by prayer and fasting. — MARK 9 : 29.

Matthew, in telling the same little story, tells us that Jesus answered his disciples by saying, "Howbeit, this kind goeth not out but by prayer and fasting." The latter form of the text is another illustration of how Jesus put much meaning into a very few words. Matthew, Mark, and Luke, all three tell this story about the demoniac child. Suppose we go over it. They had just come down from the mount of transfiguration. Peter, James, and John were the only ones that were permitted to be present on the mount. Matthew, Mark, and Luke, for some reason unknown to us, were left behind. When they came down and returned to these three there was a multitude gathered about them, and some were running. Finally, when the crowd caught sight of the Master they ran to him saluting him. He courteously asked the scribes what the trouble was — what they were discussing. It transpired that a father had brought his son to be healed of an evil spirit. You will remember that all of his disciples had been healing, and casting out devils, even when the Master was not present with them. In this case, however, there seemed to be a difficulty. The prince of darkness defied the disciples of Jesus. Satan was too great and powerful for them, and they were entirely helpless — at least Matthew, Mark, and Luke *thought* they were. They failed. The poor father comes to the Master and explains matters. He says, "I spake to thy disciples that they should cast him out, and they could not." Now, the Savior's reply is significant. He says, "O faithless and perverse generation! how long shall I be with you and suffer you?" All three agree in this statement substantially. I take it that he meant by these words, the three could have cast out this bold, defiant devil if they had only kept their faith, or, perhaps, obeyed the instructions he had previously given them; or, let us say, if they had really gone into the business *heart and soul* with a *determination* to succeed; and right here is where the whole point of my talk comes in to day. But let us first finish our little story:

He says, "Bring him to me." Luke tells us that he said to the father, "Bring thy son to me." Now a strange thing occurs. As soon as Jesus set eyes on the boy, Mark tells us, "Straightway the spirit tare him, and he fell on the ground, and wallowed foaming." Satan sometimes gets terribly desperate when he seems likely to lose his victim. In rescuing intemperate men and boys I have frequently seen cases where it seemed as if it were a hand-to-hand conflict with the Devil himself. The poor victim seems really penitent. He gladly takes hold of the hands of Christian people that are extended to help him, and, without question, *honestly* desires to break away from the toils of the evil one. We rejoice that he has been rescued. Parents, friends, and Christian people gather round him; but, to our astonishment and wonder, all of a sudden the man turns about in a most inexplicable way. Some demon in human form has managed to get him to drink, or has persuaded him that we are *not* his friends. He drinks again and again, going to a lower depth than ever before, curses his rescuers, strikes his own mother, and, oh dear me! I need not tell you the rest of it.

While this poor boy was on the way to the Savior to be healed, the devil threw him down, and tore him. Now *another* strange thing transpires. Jesus asks, with infinite sympathy and love, for both parent and child. "How long is it since this thing came unto him?" The father replies that his son has been afflicted almost all his life; and he adds, "Ofttimes it hath cast him into the fire, and into the waters to destroy him."

Are there no such things nowadays, do you say? Some twenty years ago there was a man in our town who always tried to commit suicide as soon as he was under the influence of liquor. He had been rescued several times. The last time his wife found him in the woodshed hanging by a rope, apparently dead. He was rescued, confessed his sin, and said he never thought of suicide unless he had been drinking. He came to prayer-meeting, and when asked to pray he replied he could pray in German, but he could not pray very well in English; and those who understood him said it was a most beautiful prayer to be saved from a devil that so constantly beset his footsteps. This was when we had open saloons in our town. We explained the matter to the saloon-keepers, and they all promised not to let him have a drop. When his "spells" came on he went to them repeatedly; but everybody kept it out of his way. Finally a low-lived fellow started a new saloon in spite of our remonstrances. It had not been running a week before this poor unfortunate slipped in and got some liquor. He borrowed a revolver, went and stood over the bank of the river, so that, if the bullet failed, the water would make sure. The saloon-keeper should have been tried for murder, but he was not. Public indignation, however, was so much against him that he could not make it pay, and quit. We temperance people were blamed for not telling him he must not sell liquor to Mr. H.

Dear friends, how much difference is there between the two cases? With the boy, Satan persuaded him to cast himself into the water or fire to destroy him. With the man I have been telling you about, the evil spirit suggested to him to take the revolver and the river both, so that meddlesome people could not prevent him from—what? I do not know but our whisky-dealers would say, from restraining his liberty of thought and action

At this exhibition of Satan's power the poor father says, "If thou canst do any thing, have compassion on us and help us." Why, my dear friends, while I am dictating these pitiful plaintive words my voice shakes with emotion, and I can scarcely keep back tears. The poor father, in his despair, feared even Jesus himself could not cast out this stubborn spirit. Jesus says, "If thou canst believe, all things are possible to him that believeth." You see it was want of faith from beginning to end. It was this feeble half-heartedness—the unwillingness to accept the evidence all round about them, or, if you choose, all round about *us*, of "the Lamb of God that taketh away the sin of the world."

The poor father's touching reply has come down through the ages. Even Daniel Webster, not long before his death, when he accepted Jesus Christ as the Son of God and *his* Savior, said, repeating the words of this poor father, "Lord, I believe; help thou mine unbelief."

When it was noised abroad that the Savior himself had tackled this evil spirit whose work they had witnessed for so many years, they came running together. Matthew and Luke tell us he rebuked the devil. How much that word "rebuked" expresses! Mark alone tells us just what he said. "Thou dumb and deaf spirit, I charge thee come out of him, and enter no more into him." It was as if you should tell some one who had insulted you grievously in your own home, "Get out of this house this instant, and *stay out*." Matthew says the child was healed from that very hour. But Mark tells us that even the presence of Christ, the Son of God, was not sufficient to check the *awful* audacity of the prince of darkness. He says, "The spirit cried and rent him sore." I can imagine the demon uttering a shriek, and doing his best to finish up then and there what he had long been working for; for Mark adds, "And he was as one dead, insomuch that many said, He *is* dead." And who shall say he was not dead? for Mark adds, "But Jesus took him by the hand, and lifted him up, and he arose." Jesus restored him to life exactly as he lifted the damsel but a short time before, as she lay on her bed a corpse. Satan had evidently forgotten Jesus could bring back to life even one who had passed through the portals of death. Luke says, "And they were all amazed at the mighty power of God." We can imagine the disciples standing about, timid and trembling. We know they were a little afraid of the Master. Perhaps it was only a reverential godly fear, however; but in this case remembering, probably, what he said when they first told him they could do nothing with the evil spirit, they waited until he had gone into the house and sat down, then they gathered around him and said, "Lord, why could not *we* cast him out?" Matthew and Mark use the same words. Mark gives us simply the words of our text. But we are very glad that Matthew remembered something more that he added to make it plain. He replied, "Because of your unbelief. For verily I say unto you, if ye have faith as a grain of mustard seed ye shall say unto this mountain, Remove hence to yonder place, and it shall remove; and nothing shall be impossible unto you."

Dear friends, perhaps I had better be honest with you and tell you plainly that this last quotation has always been something of a stumbling block to me. It seems to my poor human vision that the dear Savior exaggerated —that he put it *too* strongly. A grain of mustard seed is an exceedingly *small* thing; and then, again, a mountain is an exceedingly *large* thing; and, finally, nothing shall be *impossible*. Why, it makes me think of Francis Truth (begging pardon for the illustration) when he announces in the magazines and the eastern papers that there are now *no incurable diseases*. Thank God, I do not need to argue *now* that Francis Truth was a bad and wicked man. When Uncle Samuel got hold of him and revealed his iniquity, everybody gave up. Let us now consider the text a little.

I like Matthew's version of it, especially after what he had said about the mustard seed, the mountain, and impossibilities. Matthew tells us that Jesus wound up the subject by saying, "Howbeit, this kind goeth not out but by prayer and fasting." The word "howbeit" is particularly expressive; and the words "this kind" are suggestive. He admits for the encouragement, or at least I think it might have been some encouragement to them, that this *was* really a particularly hard case. The demon had got so intrenched into the heart and soul of the boy, and had been there so many years, he had become saucy, impudent, and overbearing. He even attempted to defy the Son of God himself.

"This kind!" Dear friends, are there any of "this kind" present in this day and age of the world? When the Clark local-option bill was defeated at Columbus, Mrs. Root said, "Why, how can it be that God permits such awful wickedness?" or some such expression. Others voiced the same thing. The daring and effrontery might well suggest, "Does God reign, or has Satan gotten the upper hand of every thing?" The *Daily News and Herald*, of Cleveland, O., says:

> The liquor vote in Ohio is estimated at thirty thousand. On the other hand, the Anti-saloon League, which is actively supporting the bill, has an active membership of about one hundred thousand, and the total church vote in the State which will be influenced by the defeat or passage of the Clark bill is estimated at nearly 250,000.
>
> It ought not to take one who simply looks at the *political* side of the question long to decide whether it would be better to serve the thirty thousand liquor voters or try to please the quarter of a million church voters.
>
> There is no good reason why the Clark bill should be opposed. It provides an eminently fair way of leaving to the people the decision of the question whether liquor shall be sold in the wards of cities, and no man who believes that the majority should rule can object to its passage.

I think the above is about the truth of the matter. What in the world *is* the matter of the 100,000 Anti-saloon people and the 250,000 church members, or church-member voters, if you choose. As to that matter of fasting and prayer, has that any thing to do with it? I do not understand that we are really to go without regular meals two or three days, and spend our time in prayer; but I think the expression means now and did then, that when we care enough about defeating Satan to go without our meals rather than let him *run rampant*, then we shall prevail with God. We have done praying enough, perhaps, of one kind—may be too much. But there is another kind that some of us know but very little about. Dear friends, I know *something* about the other kind, for I have had some experience. Perhaps we all or the most of us have regular times for prayer. That is well and good; but if when we pray our mind is on something else, and we repeat the same things over and over, it is not much wonder that God neglects to hear and answer. In fact, we hardly expect an answer of any sort; and this explains why the Savior groaned and lamented over man's unbelief. We have it in the beginning of our story, and we have it in the end. You set the children to doing something. They will come back and say they tried, but could not do it. The good parent says, "Oh dear me! I am sure you did not *half* try." Perhaps the children want to do something else, or do not *feel* like it. They do not *want* to succeed very bad. That would be a little rough on the temperance people of Ohio, but I am afraid it is true. There is half-heartedness all along the lines. Why, my quotation from the daily points it out and emphasizes it.

Now, Matthew, Mark, and Luke did not half try to cast out that demon. Their sympathies were not sufficiently aroused. They did not care enough about the boy or his father. The Savior was away somewhere, and I do not know but they felt a longing to go fishing or do something else. They were at fault or he would not have rebuked them as he did. I am in the habit of praying two or three times a day; but if I do not look out a good deal of it is half-hearted prayer. I am afraid I do not do much real praying until Satan gets squarely in my way, and will not let me by. Then comes prevailing prayer. A great part of my life I have lamented that I was so constantly hampered with an impatient temper. But this very impatient spirit calls out the real prayer. Just two days ago Satan stood squarely across my footpath. He kept urging me to use my authority, but I knew it was not best. He planned what I should *say* and what I should *do*, and pictured out what the *result* would be. He said I was not a *man*—had not the respect of *anybody* unless I did as he suggested. His evil suggestions followed me. I *could not* get the matter out of my mind. It was time to write my Home Papers, and I was not in a right spirit for it. I walked over to the greenhouse. Nobody was near, and I could pray out loud. But he did not give up. He followed me as he did that demoniac child—he would *not* let go. I *wrestled* in prayer for the sake of the loved ones at home, for the sake of harmony and peace in the busy workshops across the way. I begged for deliverance. I besought the dear Savior to give me the victory. Like Jacob of old I wrestled not in vain, and then came peace, harmony, and tranquillity. That was *real* prayer. Something was really accomplished, as much as if I had been fighting fire.

One morning last winter I came over to the office and opened a great valve to let the steam into the pipes that run through the building. The valve had never been screwed down securely to the seat. The whole top came loose, and the pressure of the steam raised it up a little. I put my whole weight on it, and thought first I could not get it back into place. If I let it get away from me I should be scalded before I could get out of danger. I was battling against the pressure of the steam. If I could just make the threads catch the least bit I could get it back into place. It was so early in the morning nobody was near. I became excited and nervous; but by exercising a little ingenuity, however, I managed to hold back the imprisoned power, and finally got the valve back in place. I "licked," but the tussle made me weak and faint. I felt the effects of the fright and fatigue almost all the forenoon. Now, an ungoverned temper that threatens to break loose is a thousand times *worse* than confined steam. It *must* be kept back *out of sight* at all hazards. Just turn this *force* into wrestling prayer, and *then* let it go loose—it can not do harm?

Ernest has told you in another column what faith and whole-hearted work did in Marengo, Ill. I have told you already about the fierce fight we had to keep the liquor-traffic away from Chippewa Lake, four miles from Medina. The enemy had their plans so well laid that they boasted we were helpless; but the good men and women of Medina, including the teachers and all our ministers, waked up to the importance of the matter as they were never waked up before, to my knowledge, and arose in their might. We gave the rum power an *overwhelming* defeat; and I said at the time if that same crusade were kept right up it would clean liquor-selling clear out of our county. Why, there is not a question in regard to it; and when the county is made clean, a like crusade of all temperance people would clear the State of Ohio, and Ohio ought to give other States of the Union faith and courage to let temperance rule under the stars and stripes, instead of intemperance; and finally the temperance banner could be unfurled so as to float over *the whole wide world.* Our text tells us what the trouble is, and why God does not rule instead af Satan. Jesus' followers are not willing to fast for the cause. I am really afraid some of them are not willing to forego *intoxicating drinks.* We want more *wrestling* in prayer against the encroachments of the evil one.

And now as I finish, a new beauty radiates (at least to me) from that brief little text: "Howbeit, this kind goeth not out but by prayer and fasting."

HEALTH NOTES

BY

A. I. ROOT

EATING BETWEEN MEALS, AND THE WAY IN WHICH IT MAY IMPAIR DIGESTION.

Mr. Root:—I am glad you have discovered the great pleasure there is in growing flowers. I have often thought that you must be color-blind, or else looking too high and far away, or you would discover these shining lights which are really many times right under your feet. I think you will not only find great pleasure but health among the beautiful flowers. Nice vegetables and fruit are nice (I always have an abundance), but they are dangerous things for a man in your condition to have around him except as they are dealt out to him by the judicious one at the head of the household. This may seem strange, but I believe it true.

For years your very surroundings have been just what the microbes of fermentation delight in having their victim in—plenty of vegetables, fruit, and sweets. I tell you, it is hard to see great crimson strawberries with their background of green, and not eat some of them before one gets out of the patch, and it is this eating of such things between meals that keeps up acid fermentation in the stomach more than what one eats at the regular hours. For instance, suppose you are getting along very well with the breakfast, very little signs of trouble, when you find some nice maple syrup to sample, or honey, or beautiful berries or other fruit. One eats a little of one or more of them, and feels but little if any the worse for it; but that is just where the danger lies. At this time the morning meal is nearly passed out of the stomach; but little remains, and that will be the coarse or poorly masticated part, such as bits of potato and fruit in which fermentation has nicely begun, yet would, with a drink or two of water, pass through the pylorus into the intestines, and cause but little trouble; but at this time if one adds to these little bits of fermenting food a few spoonfuls of sweet or other food which ferments quickly, trouble is bound to come—not so much noticed at that time, or for some time after, but before night. It is a good deal like putting a cup of yeast into a barrel of beer or any thing one wants to ferment. The yeast is weakened, or diluted, at first; but just wait a little while, and it will make its presence known.

But, to go back to our victim, we find that at 10 A.M. he has added to the little yeast cakes—pardon the comparisons, but that is about what they represent—a few ounces of sweet and a drink of water (not enough to reduce the sweet to a less than two-per-cent solution); this makes a good batch of yeast, and by dinner time it is in fine trim. Now for the dinner, it matters not what it be; unless the meal is entirely of lean meat or eggs, there is now in the stomach so much of this yeast-like stuff that its acid will destroy the effect of the alkaline secretions—if they haven't already become acid; digestion is stopped, and the victim filled with gas until he can do but little until the whole mass has had time to pass off, which it may not do before another addition is made in the shape of a supper, and so on from day to day, the curse being laid on the food taken at noon, when it should have been on the small bits taken between meals.

Doctors have, in my mind, done a great deal of harm by advising such patients to eat little and often. Better eat a fair meal, and then give it time to pass thoroughly out of the stomach before more is added. I have been through the mill, and I think one can do more for himself than any other man can for him. I will tell you why I am so sure that what I write is just about the facts, in cases of acid fermentations of food in the stomach.

For years I have (the cause unknown to myself) been in poor shape to do any thing. Why, I could hardly bend myself over a hive or do other work; short breath, hard rapid beating of the heart, sensation of pressure on eyes, and dizzy headache, restless nights, lying for hours in a cold sweat, and—well, you know the whole train of distressing conditions better than one can tell you. I will tell you how I obtained relief—that is, temporarily. I drank freely of warm water until I threw up what was in my stomach; and even though it had been there four or five hours it was as swallowed except that it was so sour it made my throat sore for over a week. But I felt like a new man right straight off. I then drank a great lot more, but took soda with it, and thoroughly rinsed my stomach, and soon threw that up also. It was then that I knew my real trouble, or, rather, the cause of it. I could not bend over, because I was so full of gas—yes, that's just what I mean, and you may just as well laugh as not. It also prevented me from taking a full breath, made pressure on the heart, and a sense of fullness in the eyes and head. My system was filled with acid, so I could not keep warm without a load of clothes. After getting such relief from one treatment I began in earnest to try what I called a new thing. You have advocated thoroughly rinsing the bowels with water; but I believe the *stomach* is what needs the washing. For about four months there were but few days when I did not thoroughly wash and cleanse my stomach. First, half a teaspoonful of soda in half a glass of warm water is taken to sweeten the contents of the stomach so as to prevent strangling and sore throat in case there is much acid. Then drink a quart of sloppy warm water; and as the last swallow is going down, a little effort will change its course, and the whole mess will come up. I usually repeat the operation once or twice, or until the water comes up as clear as when swallowed. At first it may be difficult for some to do this; but I think that, with a little effort, any one can. This, with attention to some other little things as regards eating and what one eats, have done for me what doctors have failed to do. CHESTER A. OLMSTEAD.

E. Bloomfield, Ont. Co., N. Y.

Friend O., I think yours must be an extreme case. I have had some such experience. Is it any wonder that people have sick-headache when their digestive apparatus is charged with stuff so foul that it scalds the throat in throwing it up? Soda and various alkaline lozenges sometimes give temporary relief; but I think your remedy is more likely to go to the bottom of the mischief and build up good digestion. Why, it makes me think of the recent exhortations in the agricultural papers to the friends who make maple sugar—I mean in regard to giving their sap-kettles and other utensils a frequent and thorough cleansing with boiling water. It is a pity if we can not take as good care of these bodies of ours as the sugar-makers and milk-men do of their pails and cans. Your article is certainly an excellent supplement to our water-cure tracts; and I think that hereafter we shall have to incorporate it in with them.

Let me digress a little to say that one of our subscribers sent me an advertisement of a wonderful discovery called "Nature's Own Cordial." The proprietors charged a dollar for the formula. Our friend wanted to know if I would advise him to send the dollar. I said, "No, no! We will send the dollar and then give it free to all the readers of GLEANINGS." Here is the dollar formula:

FORMULA FOR NATURE'S OWN CORDIAL.

Oatmeal, ½ lb.; pulverized charcoal, 1 oz.; pulverized slippery-elm bark, ½ oz.; ground cinnamon, ½ oz.

Put the oatmeal in a shallow pan, and brown in an oven. Do not allow it to scorch or burn.

The charcoal as well as the slippery elm and cinnamon can be purchased already pulverized.

Mix these ingredients thoroughly, put in a sealed jar, and keep in a dry dark place.

After abstaining from food for two days, take two teaspoonfuls of this mixture in a cup of hot water before breaking your fast. Thereafter take one teaspoonful before each meal in half a cup of boiling water. Do not attempt to masticate this preparation thoroughly. It should be moistened with the salivary fluid just sufficiently to swallow with ease.—*Secular Science and Common Sense.*

No doubt the above, in some cases, will be beneficial. First, the patient is to fast until his stomach is thoroughly cleansed. The roasted oatmeal would then furnish a wholesome nutrition, and may be the slippery elm would help it some. The powdered charcoal will absorb the gases and cleanse the stomach and intestines; and the cinnamon, I suppose, would make it palatable. Some people urge that if a thing like this is put in the papers nobody will bother himself to try it. If the recipe or secret costs the patient a dollar (or five) then he would be sure to procure some of the stuff and take it according to directions. But even granting this to be true, does it make it right to charge your neighbor a dollar for something that can be written or printed on a postal card? A dollar ought to buy a pretty good-sized doctor book, and one that comes from good authority.

ABSENT-TREATMENT HEALING, ETC.

It does me good to see you still after the humbugs and swindles; and I often think it is a burning shame that influential and apparently respectable and honest papers will, instead of crying down these scoundrels, sell them advertising space; and I sometimes really wonder if a large part of the hard-working people are going crazy. And now I want to tell you of a case in this county. Magnetic healer No. 1 (I will call him) went to *Nevada, Mo.*, a few months or weeks, and "learned the trade," and, for a consideration of some kind, taught it to *healer No. 2.* Both are making some wonderful cures, according to reports. No. 2 had an accident and hurt his arm. He supposed he had sprained it, and went about with it for several days. One day he complained to a gentleman who is a doctor by profession, but has not practiced for many years. Healer No. 2 said he could take away the swelling by his own *treatment*, but it would return. The doctor took hold of his arm, and discovered at once that one bone of the forearm was broken. He said he could easily feel the broken parts grating together. How would you like to take the "absent treatment" from a man who does not know it *when his arm is broken?* S. E. MILLER.

Bluffton, Mo., April 11.

We have a healer and a school here. The magnetic healer, Mr. Yates, says Weltmer, of Nevada, Missouri, takes in as high as $2200 a day. They have about 60 typewriters. They say about one in ten healers who graduate practices. They work through the will and imagination, and wonderful cures take place. It is the life principle which cures, and not medicine, so say scientific men. This explains why quack doctors, Electropoise, magnetic, little potatoes in the pocket, Christian science, electric belts, mesmerism, and all such, have equal success, and all the patent medicines, and many doctors. One drug clerk told me they had for years sold goose grease, skunk oil, etc., out of the same jar. It works just as well.

Shenandoah, Iowa. O. H. HYATT.

Why, old friend, you started off quite scientifically, and I was reading your letter with a long sober face until I got down to the concluding sentence; but where you drop so suddenly from the sublime to the ridiculous we had a big laugh over it all around. Now, in justice to our readers permit me to add a postscript to the above letter that contains a great truth, and a great truth that covers this whole business:

> The world has been hypnotized by the Devil since the time of Eve, and only Jesus himself can break that spell.

A NEW PORTABLE ELECTRIC LAMP.

I have from time to time, as you may know, described important improvements as they came into the market for a portable electric lamp. Just now we have something ahead of any thing that has heretofore appeared, especially where you have electric lighting in your home or place of business. Of course, the lamp can be used where there is no electric plant; but, in this case it must be run entirely by cheap batteries. As a storage battery it weighs less than any thing heretofore put on the market. In fact, the little lamp I am using to visit the greenhouse after dark, to look at the barometer, to go into the barn or warehouse where I do not wish to take an oil-lamp, etc., weighs only 1 lb. all complete. This is not a dry battery; and, in fact, the great objection to the dry batteries is, they must be used within a certain period or they are no good, as some of the friends have already discovered; and when you want to replenish your dry battery, you have got to get a new one; and where they are sent by mail or express, the transportation costs more than the battery itself. Well, this new electric light is run by a battery costing at first 35 cents.* This will run a little lamp nicely for about ten hours, either as a flash light or as a continuous light; and you may take a month or two to use up the whole ten hours if you choose; but after the battery is run out, or, in fact, before it is quite run down, it can be cheaply renewed. We have given these lamps to our night watchmen, and to men in charge of the warehouse, where they have to look into dark corners in handling goods, and anywhere else where an oil-lamp or lantern might otherwise be used. These lamps will not set any thing on fire, and therefore enable you to dispense entirely with matches and oil for lights.

When Benjamin Franklin flew his kite, and charged a leyden jar, the world said he had bottled up the lightning; but Franklin did did not live to see lightning bottled in such a way as to use it a little at a time for lighting up dark corners. This latter achievement seems now to belong principally to the United States Storage Battery Co., 253 Broadway, New York, to whom you can write for prices and full particulars in regard to storage batteries and portable lamps. They promise to send me an improved bicycle-lamp in a few days, charged in the manner specified. When they do I will tell you about it.

There is also another similar apparatus, made by the Vesta Accumulator Co., 53 Dearborn St., Chicago, but it weighs quite a little more; and this latter battery, when charged with liquid, is really a regular storage battery, and will give a light continuously for two years or perhaps more. It can be stored by attaching it to the socket where any electric bulb is attached; and it receives a charge in 10 or 12 hours to give a very good light for 12 to 15 hours. Either firm will furnish you full particulars in regard to these new portable electric lights. When I wish to go out after dark on my wheel in a hurry I just pick up the electric lamp we use at our bedside nights, for a flash-light to tell what time it is. This lamp is so light I can just hang it on the handle-bar, or even carry it in my hand. The latter method is rather preferred, because I can easily direct the light on any spot I wish in passing or in turning it toward a vehicle coming my way. I very much prefer such a lamp, all complete in itself, to one where the battery is one thing and the lamp another thing, the two being connected by wires. In this age of hurry we want something we can pick up and turn on the light by touching a spring, quicker than you can scratch a match; and the arrangement I have described above is of this kind.

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* These cheap batteries are packed in a box, the liquid being securely put up in a bottle; and in this shape they can be kept months or years without any deterioration until you want to use them. When required, the liquid is poured into the battery. Then it is ready to be put into the lamp to give light as above. These batteries can be shipped at small expense by freight, and kept till required for use. It makes the whole apparatus more practical than any thing we have had heretofore.

THE NATURAL-HEN INCUBATOR, ONCE MORE.

I should have mentioned in our last issue (see page 322) the fact that the Natural-hen Incubator Co. promptly returned the dollar I sent them, as soon as they received my letter telling them I thought they ought to furnish a fair-sized book for the dollar instead of information that was all contained on a single sheet of paper; and I have since learned that Mr. Seims is or has been a bee-keeper. He says he returns the money to everybody who is dissatisfied, and I have reason to believe he does. But even though he does, there is something about the business that is not quite straight—at least that is the way it looks to me. From their letter-head I quote the following:

> Our agents make as high as $5 to $15 a day. Exclusive territory granted to canvassing and general county agents.

I make no objection to agents getting $5 to $15 a day. A good agent *may* do this in selling agricultural machinery or perhaps bee-hives (in the latter case, however, he would have to be a "hustler" if he furnished goods at regular prices). But how about the "exclusive territory"? There is not any patent on the device, and I do not see how agents can sell these pieces of paper for a dollar apiece unless each purchaser signs a contract not to show it to his neighbor. But even suppose he does this, the apparatus must be set up outdoors, and the neighbors would naturally call around to see how it works. What is to hinder them from going home and making one like it so long as there is no patent on it? The Incubator Co. gives no deed of "individual right." They simply furnish a piece of paper, with the picture and directions on it. I think there is a stamp across the picture, saying, "Patent applied for." But how can there be a patent on any thing that has been in use for "ten or more years," and is pictured and described as free to everybody in our agricultural journals—see page 322 of our last issue, above referred to?

Now, even though their customer gets his money back if he is not satisfied, is not the whole thing worked in a way to obtain people's money unfairly?

HIGH PRESSURE
GARDENING
BY
A. I. ROOT.

TURNING UNDER WHEAT INSTEAD OF RYE.

Last season I had excellent success with a small plot by turning under wheat instead of rye. I wrote to our experiment station about it as follows:

> By accident I turned under a heavy growth of wheat instead of rye last spring, and from one experiment the wheat seems to be worth ever so much more than any crop of rye I ever turned under. Have you people ever made any experiments with wheat as a green crop to turn under for growing potatoes? and can you tell us about what time to turn under either wheat or rye to give the most advantage to potatoes? With our late crops of potatoes we can turn the wheat under at any stage, even when it is headed and filled with grain. You may say this would be extravagant manuring; but how much more extravagant than to turn rye under when it is well headed out? Of course, we can get a good crop of rye here after we dig our potatoes, which would not be so with wheat (in place of rye) so late in the season. Where wheat falls down badly, it can, many times, be turned under and potatoes put in.

Prof. W. J. Green replies as follows:

> *Mr. Root:*—Regarding the comparative value of wheat and rye for green manure, I can give you no information. I have turned under rye a number of times, but I have never practiced this method with wheat, nor have I heard of any experiments along this line. It is possible that the success in turning under of wheat in your case is due to some other circumstances and conditions. It is well known that, in turning under a green crop of manure, much depends upon the weather soon after, as well as the condition of soil and the quantity of straw turned under. If the weather should prove to be very dry soon after the plowing is done, it may happen, and often does happen, that a heavy crop of any kind turned under is injurious to the soil for that season. This is for the reason that the crop just turned under holds the soil loosely, causing it to dry out much more than if the crop had not been turned under. If, however, a heavy rain comes soon after the plowing is done, so as to rot the crop, then the larger the quantity of straw turned under the better. I can not see that there can be very much difference in value as a fertilizer between wheat and rye; but rye is commonly used because it can be grown later in the season than wheat, and, as a general thing, it produces more straw than wheat. I am of the opinion that it is better to turn rye under before it gets to its full height than to wait until it is nearly ripe. This is because of the danger above stated of dry weather occurring soon after the crop is plowed under. Perhaps you know that it is now believed by many, that, where rye is turned under for potatoes, there is likely to be no potato scab. It will be interesting if you will note the effect of the wheat on the scab.
>
> Wooster, O., Aug. 8. W. J. GREEN.

STRAWBERRIES, CORN, AND BUCKWHEAT ALL IN ONE SEASON.

> Strawberries are blooming here finely. I have five acres of fine berries. I grow my berries in half-matted rows. I set them out year before last, the first of April, and the first of June (last year) I planted corn between them *in the row*, one stalk in a hill, and made 50 bushels of corn to the acre. I laid it by the first of August, and sowed it in buckwheat that grew waist high to me, and I am a six-foot man. It is all right to grow corn in strawberries if you let the latter get well rooted before you plant the corn. I made 100 crates of berries to the acre. S. M. CAMPBELL.
>
> Mountainburg, Ark., Mar. 28.

If I am correct, the above is quite practical, probably, in many localities. The ground is so well manured for the strawberry crop that corn will grow without any trouble, even without plowing up the ground. The corn is to be cultivated, I take it, as usual; then at the proper time get your buckwheat in between the rows of corn. Get off your corn without injury to the buckwheat, and you are all right for the three crops in one season; but I think our good friend C. must make his ground pretty rich in getting his crop of strawberries.

FLOWERS AROUND THE HOME.

> How I should enjoy a visit to that greenhouse! I am a great lover of flowers. I have had poor health for years, and many times have worked in my kitchen till I was so tired it didn't seem as if I could do any more work; but when I got to the sitting-room and looked out at my lovely flowers I could not resist the temptation. Out into the yard I would go, and go to pulling weeds. The fresh air and all the loveliness of this beautiful world our heavenly Father has given us

to enjoy made me forget for a time my weary frame. Yes, you may thank God for this new pleasure; for if there is nothing else visible it is a blessing—at least it is to me. When I see people's yards destitute of flowers, and no vines about the porch or windows, I almost pity them.
MRS. N C. DOZIER.
Ashland, Oregon, Mar. 28.

THAT LITTLE GREENHOUSE.

I remember seeing, some years ago, a man going around town with a wagon, selling plants; and I especially remember something he called cineraria. Seeing them advertised for a small amount in the *American Florist* I sent for half a dozen, assorted colors. I think the price was a dollar a dozen. Afterward I saw some smaller plants advertised for about 4 cents each, and I ordered 25. Well, now they are just getting well in bloom, especially the larger ones. I have been trying to think of a word that expresses what the cineraria looks like; and the word "animated" comes the nearest to it. It has such a sprightly, vivacious, almost *coquettish* look, that some mornings when I go out to the greenhouse for the first time I almost feel like shouting. I can imagine the beautiful blossoms with their startling bright colors speaking, if not in words, in a way that flowers do speak, "Mr. Root, *a'n't* I pretty?" Then another one says, "Mr. Root, a'n't *I* pretty?" And then the third one says, "And what do you think of *me?*" Then one of the smaller ones peeps out of the foliage and says, "Well, I am a little different, as you see, from any of the rest; but don't you like me *too?*" Well, it is so early in the morning that nobody else is around—possibly about five o'clock, and I can talk to my posies without any fear that somebody will overhear me, and think I am out of my head, or something of the sort; so I reply, "Yes, yes, you precious little darlings, you are all handsome—every one of you, and I thank you from the bottom of my heart for trying so hard to please me and give me pleasure. May God be praised that he has seen fit, during the latter years of my life, if not before, to 'strew flowers along my pathway,' and also to open my eyes that I might see them."

I have one bed made up of cinerarias and pelargoniums. The foliage is considerably alike, but the flowers make a very pretty contrast. By the way, I found a pelargonium belonging to a lady not a hundred rods from the greenhouse. It is, perhaps, two feet high, and nearly two feet across, trained on a trellis, and just covered with those beautiful entrancing blossoms. She says they call it "apple-blossom geranium."

Well, there is another of the geranium family that is giving me great pleasure. It is the ivy-leaved geranium. I have noticed these, but I did not know before they furnished such great masses of beautiful bloom. A friend gave me a slip last fall, and now it is three feet high, and bigger than a barrel. It is trained around one of the iron posts in the greenhouse. When I saw great quantities of buds coming out along in March I thought possibly it would be some small insignificant flower. But the blossoms are large and very handsome. Our good friend Pike sent me some rooted cuttings of ivy-leaved geraniums. Like all the rest of the posies there seem to be ever so many different varieties. These were named "the Bride," "Joan of Arc," and so on; and to my surprise some of them are covered with buds while yet in thumb pots. Is that a modern invention among florists—getting plants to blossom when they are hardly any thing more than rooted cuttings? Besides, the ivy leaved geranium is about the easiest thing to make grow I ever got hold of. It is not only easy to start, but it keeps growing, and grows "out of sight," as the expression goes, almost before you know it. I have not learned how to make *every* thing grow yet, by considerable. My roses have bothered me greatly. The leaves turn yellow and drop off, then they die. I am sure they are not too wet nor too dry, and I do not believe they are too warm. About *half* of them are blooming most beautifully. I put the sick ones outdoors to see if the open air would not cure them. They are in a bed, so if there should be a frost I can put the sash over them.

Both of my ginseng plants started in the greenhouse are dead. Perhaps I should not have put them in the greenhouse at all. I sent and got some more, and part of them are growing, and the other part started all right; but the leaves get moldy, and the plant rots, root and branch. I really hope other folks get along better, for ginseng is a pretty expensive plant just now to have die on your hands.

BRAN FOR BEES.

Our neighbor across the way, a grain-dealer, got in a carload of bran in bulk; and on this beautiful 16th day of April they began shoveling it up to store it in their warehouse. But the bees from our apiary just across the way, in consequence of the cold March and April so far, were lacking in pollen, and they pitched into the bran with such vim that the men who were shoveling beat a retreat. Why, it made one think of a leaky carload of honey, only the bees seemed to be very happy and civil in their rejoicing over their big find of pollen. I got one of our biggest wheelbarrows, loaded it up with bran, and wheeled it out into the apiary as a "counter-irritant;" I think that is what the doctors call it, don't they? Well, just now (about 3 in the afternoon) it makes me feel like old times to hear the bees humming and rejoicing over that big wheelbarrow full of bran. I tipped it up edgewise so the coarser particles would run down over the side, and that seems to be just the thing to suit them.

THE FAMINE SUFFERERS OF INDIA.

As some inquiry has come in in regard to how this money is sent, and how much of it is given for salaries, and the expense of sending it to the sufferers, I have asked the treasurer of the American Board to give a brief statement, which I take pleasure in submitting:

Dear Mr. Root:—Your favor of April 7th is received.

and in reply to your inquiry I am pleased to make the following statement:

The American Board and its officials have consented to receive all sums sent to it for India Famine Relief, and such sums are being acknowledged in detail in the *Congregationalist*, from week to week. As the Board makes no charge whatever for receiving and forwarding this money, to save expense for postage and clerical assistance, unless specially requested, receipts are not sent to individual donors, as the public acknowledgment in the *Congregationalist* is deemed sufficient.

With the exception of a few dollars paid to the cable company for dispatches making the relief more speedily available, every cent of what has been contributed has been forwarded to India, and this money is all being used by a committee of American missionaries for the relief of the famine-stricken—these missionaries, as I understand it, giving their services without charge. In this way all that has been contributed, save what has been paid to the cable company for messages, goes directly to the suffering natives of India. FRANK H. WIGGIN, Treasurer.

Boston, Mass., April 11.

In regard to the amount that is being subscribed and sent in from America, you have doubtless seen statements in most of the papers. Great sums are being forwarded from all over our land; and so far as I can learn a great deal of the destitution is being relieved. Competent authorities are already doing what I suggested—employing the people to work on canals and reservoirs for furnishing irrigation in order that they may, in a little time, begin to feed themselves. All nations recognize that it is better to set the people at work for moderate pay than to give them supplies or money outright. Heedless giving encourages shiftlessness and pauperism; while setting people at work for regular pay helps them to help themselves. I still think all money had better be sent to the American Board as per the address given in the letter above; but I will undertake to forward it for those who find it inconvenient to send it there, and we will also make public mention of all sums sent, as other periodicals are doing, through our pages.

As we go to press the following sums have been received up to date:

Total sent in previous to this issue, $33.00.

Amount sent in during the last of April:

Edw. Smith, Carpenter, Ill., $1.00.
Mrs. Ellis, New Martinsburg, Ohio, $1.00.
E. Pickup, Limerick, Ill., $5.00.
Geo F. Leslie, Braeburn, Pa., $1.30.
W. E. Flower, Ashbourne, Pa., $1.00.

Please notice the American Board have arrangements so the money can go by cable; therefore it gets to the spot, and helps the starving, almost the very minute you put it in the hands of the American Board.

KANSAS' GIFT OF ONE MILLION BUSHELS OF CORN TO THE STARVING IN INDIA.

The thing is going along, I conclude, from the following which I clip from the Topeka *Daily Press*:

> A committee, of which Gov. Stanley is chairman, will meet and arrange for a systematic canvass of the State for funds. Fifteen hundred dollars and a carload of corn were pledged at the meeting to-night.

KIND WORDS FOR THE FAULTLESS SPRAYER

I shall have something interesting to write you about the sprayers before long. The (two dozen) little things have saved us hundreds of dollars on our crops this year. UDO TOEPPERWEIN.

Leon Springs, Tex., April 9.

Books for Bee-keepers and Others.

Any of these books on which postage is not given will be forwarded by mail, postpaid on receipt of price.

In buying books, as every thing else, we are liable to disappointment if we make a purchase without seeing the article. Admitting that the book-seller could read all the books he offers, as he has them for sale, it were hardly to be expected he would be the one to mention all the faults, as well as good things about a book. We very much desire that those who favor us with their patronage shall not be disappointed and therefore we are going to try to prevent it by mentioning all the faults, so far as we can, that the purchaser may know what he is getting. In the following list, books that we approve we have marked with a *; those we especially approve, **; those that are not up to times, †; books that contain but little matter for the price, large type, and much space between the lines, ‡; foreign, ȣ. The bee-books are all good.

As many of the bee-books are sent with other goods by freight or express, incurring no postage, we give prices separately. You will notice that you can judge of the size of the books very well by the amount required for postage on each.

BIBLES, HYMN-BOOKS, AND OTHER GOOD BOOKS.

Postage.]		[Price without postage.
8	Bible, good print, neatly bound	20
10	Bunyan's Pilgrim's Progress**	50
	Christian's Secret of a Happy Life.** 50c; cloth	1 00
3	John Ploughman's Talks and Pictures, by Rev. C. H. Spurgeon*	10
1	Gospel Hymns, consolidated, Nos. 1, 2, 3, and 4, words only; cloth, 10c; paper	5
2	Same, board covers	20
5	Same, words and music, small type, board cov.	45
10	Same, words and music, board covers	75
3	New Testament in pretty flexible covers	05
5	New Testament, new version, paper covers	10
4	Stepping Heavenward**	18
5	Tobacco Manual**	45

This is a nice book that will be sure to be read, if left around where the boys get hold of it, and any boy who reads it will be pretty safe from the tobacco habit.

BOOKS ESPECIALLY FOR BEE-KEEPERS.

15	A B C of Bee Culture, cloth	1 10
	Advanced Bee Culture, by W. Z. Hutchinson	50
3	Amateur Bee-keeper, by J. W. Rouse	22
14	Bees and Bee-keeping, by Frank Cheshire, England, Vol. I., ȣ	2 36
21	Same, Vol. II., ȣ	2 79
	Same, Vols. I. and II., postpaid	5 25
10	Bees and Honey, by T. G. Newman	90
10	Cook's New Manual, cloth	1 15
5	Doolittle on Queen-rearing	95
2	Dzierzon Theory	10
3	Foul Brood; Its Natural History and Rational Treatment	22
1	Honey as Food and Medicine	05
15	Langstroth Revised, by Chas. Dadant & Son	1 10
15	Quinby's New Bee-keeping	1 40
	Thirty Years Among the Bees, by H. Alley	50
	Bee-keeping for Profit, by Dr. G. L. Tinker	25
5	The Honey bee, by Thos. William Cowan	95
	British Bee-keeper's Guide-book, by Thomas William Cowan, England ȣ	40
3	Merrybanks and His Neighbor, by A. I. Root	15
4	Winter Problem in Bee-keeping, by Pierce	46
	Bienenzucht und Honiggewinnung	50

Or "Bee Culture and the Securing of Honey," a German bee-book by J. F. Eggers, of Grand Island, Neb. Postage free.

MISCELLANEOUS HAND-BOOKS.

5	A B C of Carp Culture, by Geo. Finley	25
5	A B C of Strawberry Culture,** by T. B. Terry	35

Probably the leading book of the world on strawberries.

3	A B C of Potato Culture, Terry**	35

This is T. B. Terry's first and most masterly work.

	Barn Plans and Out-buildings*	1 50
	Canary birds, paper	50
2	Celery for Profit, by T. Greiner**	25

The first really full and complete book on celery culture, at a moderate price, that we have had. It is full of pictures, and the whole thing is made so plain that a schoolboy ought to be able to grow paying crops at once without any assistance except from the book.

15	Draining for Profit and Health, Warring	1 35
10	Fuller's Grape Culturist**	1 15
8	Domestic Economy, by I. H. Mayer, M. D.**	30

This book ought to save at least the money it costs, each year, in every household. It was written by a doctor, and one who has made the matter of domestic economy a life study. The regular price of the book is $1.00, but by taking a large lot of them we are enabled to make the price only 30 cents.

10	Farming for Boys*	1 15

This is one of Joseph Harris' happiest productions, and it seems to me that it ought to make farm-life fascinating to any boy who has any sort of taste for gardening.

	Farming with Green Manures, postpaid**	90
7	Farm, Gardening, and Seed-growing**	90
	Fungi and Fungicides, paper, 50c; cloth	1 00
12	Gardening for Pleasure, Henderson*	1 35
12	Gardening for Profit**	1 35
8	Gardening for Young and Old, Harris**	1 25

This is Joseph Harris' best and happiest effort. Although it goes over the same ground occupied by Peter Henderson, it particularly emphasizes thorough cultivation of the soil in preparing your ground; and this matter of adapting it to young people as well as old is brought out in a most happy vein. If your children have any sort of fancy for gardening it will pay you to make them a present of this book. It has 187 pages and 46 engravings.

3	Ginseng Culture, by Morris G. Cains	25
3	Grasses and Clovers, with Notes on Forage Plants	20

This is by Henry A. Dreer, author of the book, "Vegetables Under Glass" that has had such a large sale of late. This little book tells how six tons of grass has been grown to the acre, and gives much other valuable matter.

10	Greenhouse construction, by Prof, Taft**	1 15

This book is of recent publication, and is as full and complete in regard to the building of all glass structures as is the next book in regard to their management. Any one who builds even a small structure for plant-growing under glass will save the value of the book by reading it carefully.

12	Greenhouse Management, by Prof. Taft**	1 15

The book is a companion to Greenhouse Construction. It is clear up to the times, contains 400 pages and a great lot of beautiful half-tone engravings. A large part of it is devoted to growing vegetables under glass, especially Grand Rapids lettuce, as well as fruits and flowers. The publisher's price is $1.50; but as we bought quite a lot of them we can make a special price as above.

5	Garden and Farm Topics, Henderson**	60
	Gray's School and Field Book of Botany	1 80
5	Gregory on Cabbages, paper*	20
5	Gregory on Squashes, paper*	20
5	Gregory on Onions, paper*	20

The above three books, by our friend Gregory, are all valuable. The book on squashes especially is good reading for almost anybody, whether they raise squashes or not. It strikes at the very foundation of success in almost any kind of business.

	Handbook for Lumbermen	05
5	Home Pork-making; 125 pages, illustrated	40

I think it will pay well for everybody who keeps a pig to have this book. It tells all about the care of the pig, with lots of pictures describing cheap pens, appliances, all about butchering, the latest and most approved short cuts; all about making the pickle, barreling the meat, fixing a smoke-house (from the cheapest barrel up to the most approved arrangement); all about pig-troughs; how to keep them clean with little labor; recipes for cooking pork in every imaginable way, etc. Publisher's price is 50 cents, ours as above.

10	Household Conveniences	1 40
15	How to Make the Garden Pay**	1 35
2	How to Propagate and Grow Fruit, Green*	15
2	Injurious Insects, Cook	10
10	Irrigation for the Farm, Garden, and Orchard*	1 10

By Stewart. This book, so far as I am informed, is almost the only work on this matter that is attracting so much interest, especially recently. Using water from springs, brooks, or windmills to take the place of rain, during our great drouths, is the great problem before us at the present day. The book has 274 pages and 142 cuts.

7	Market-gardening and Farm Notes	75
3	Maple Sugar and the Sugar-bush**	32
4	Peabody's Webster's Dictionary	10

Over 30,000 words and 250 illustrations.

5	Manures; How to Make and How to Use Them; in paper covers	30
6	The same in cloth covers	65
	Nut Culturist, postpaid	1 50
3	Onions for Profit**	40

Fully up to the times, and includes both the old onion culture and the new method. The book is fully illustrated, and written with all the enthusiasm and interest that characterizes its author, T. Greiner. Even if one is not particularly interested in the business, almost any person who picks up Greiner's books will like to read them through.

	Our Farming, by T. B. Terry**	1 50

In which he tells "how we have made a run-down farm bring both profit and pleasure."

This is a large book, 6x9 inches, 367 pages, quite fully illustrated. It is Terry's first large book; and while it touches on the topics treated in his smaller handbooks, it is sufficiently different so that no one will complain of repetition, even if he has read all of Terry's little books. I should call it the brightest and most practical book on farming, before the world at the present day. The price is $2.00 postpaid, but we have made arrangements to furnish it for only $1.50.

If ordered by express or freight with other goods, 10c less.

1	Poultry for Pleasure and Profit.**	10
8	Practical Floriculture, Henderson.*	1 10
10	Profits in Poultry.*	75
1	Silk and the Silkworm	10
10	Small-Fruit Culturist, Fuller	1 10
2	Sorghum, Stock Beets, Strawberries, and Cement Floors. By Waldo F. Brown.	08

This little book ought to be worth its cost for what is said on each of the four different subjects; and the chapter on cement floors may be worth many dollars to anybody who has to use cement for floors, walks, or any thing else. In fact, if you follow the exceedingly plain directions you may save several dollars on one single job; and not only that, get a better cement floor than the average mason will make.

10	Talks on Manures*	1 35
7	Ten Acres Enough**	75
10	The New Agriculture; or, the Waters Led Captive (a $1.50 book)	40
11	The New Egg-Farm, Stoddard**	70

This is an enlarged edition of the 50-cent book published 25 or 30 years ago by H. H. Stoddard. If I could have only one poultry-book it would be the New Egg-farm. This book is of special value to me because it not only discusses most emphatically the value of *exercise* to poultry, but it touches on the value of exercise to all other animated nature including humanity. The book has over 300 pages and 150 illustrations. It is entirely different from any other poultry-book in the world, inasmuch as it discusses mechanical contrivances so that all the varied operations of a poultry-farm may be done as much as possible with the aid of machinery. The regular price is $1 00, but by buying a quantity we are able to furnish it at price given.

2	Treatise on the Horse and his Diseases	10
5	Tile Drainage, by W. I. Chamberlain	35

Fully illustrated, containing every thing of importance clear up to the present date.

The single chapter on digging ditches, with the illustrations given by Prof. Chamberlain, should alone make the book worth what it costs, to every one who has occasion to lay ten rods or more of tile. There is as much science in digging as in doing almost any thing else; and by following the plan directed in the book, one man will often do as much as two men without this knowledge. The book embraces every thing connected with the subject, and was written by the author while he was engaged in the work of digging the ditches and laying the tiles HIMSELF, for he has laid literally miles of tile on his own farm in Hudson, Ohio.

3	Tomato Culture	35
3	Vegetables under Glass, by H. A. Dreer**	20
3	Vegetables in the Open Air*	20

This is a sort of companion book to the one above. Both books are most fully illustrated, and are exceedingly valuable, especially at the very low price at which they are sold. The author, H. A. Dreer, has a greenhouse of his own that covers one solid acre, and he is pretty well conversant with all the arrangements and plans for protecting stuff from the weather, and afterward handling to the best advantage when the weather will permit out of doors.

3	Winter Care of Horses and Cattle	25

This is friend Terry's second book in regard to farm matters; but it is so intimately connected with his potato-book that it reads almost like a sequel to it. If you have only a horse or a cow, I think it will pay you to invest in a book. It has 44 pages and 4 cuts.

3	Wood's Common Objects of the Microscope**	47
8	What to Do and How to be Happy While doing It, by A. I. Root	42

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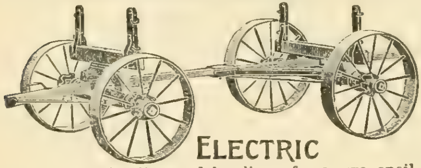

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instance the loading and hauling of manure, ensilage corn, grain in the straw, corn fodder, hay, &c., all hard to load, the use and advantages of a low down wagon are almost inestimable. The Electric Low Down Handy Wagon excels for these purposes. Has the famous Electric steel wheels.is light, strong and durable. Write Electric Wheel Co., Box [illegible] Quincy, Ill., for catalog.

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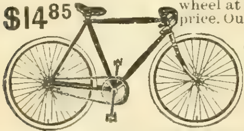

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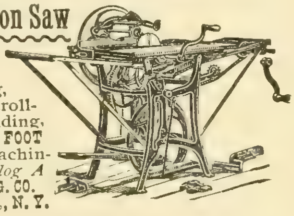

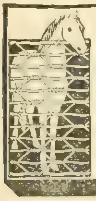

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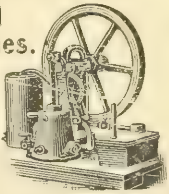

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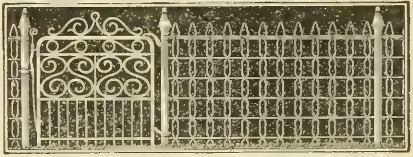

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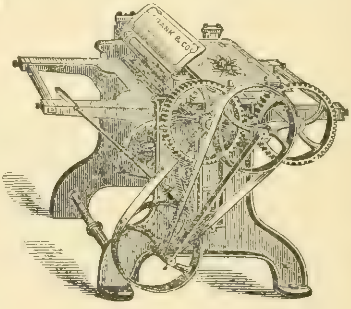

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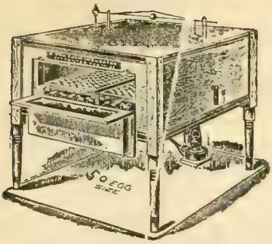

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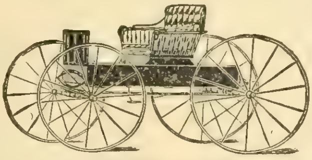
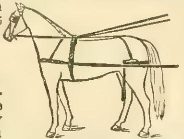




You Pay Double the Money

in many cases when you buy vehicles and harness from the agent or dealer. We do without these people and reduce the price of our goods to you to the extent of their commissions. We make 178 styles of vehicles and 65 styles of harness and sell them to the consumer direct from our factory at wholesale prices.

WE HAVE NO AGENTS

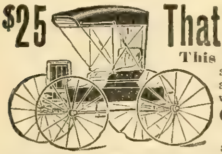
You pay a profit to nobody except our manufacturing profit, and you get positively the best goods which a given amount of money will buy. In a factory of the size of ours you **get the best possible selection.** Our large illustrated Catalogue contains cuts of everything we make. Remember that we ship our vehicles and harness anywhere for examination and guarantee safe delivery and warrant everything.

No. 21—Driving Wagon. Has "Long Distance" axles, open rubber head springs, Bradley shaft couplers and Bailey loops. Price with shafts, $60. Same as others sell for $40 to $50 more than our price.

No. 65—Single Buggy Harness. Price with rubber trimmings, $16. Good as retails for $22.

SEND FOR LARGE FREE ILLUSTRATED CATALOGUE.

Elkhart Carriage and Harness Mfg. Co., W. B. Pratt, Sec'y, **Elkhart, Indiana.**



$25 That's What we Save You on this Deal.

This Buggy is of such high quality and style, that any dealer, taking advantage of its superior points, would ask you **$75.** for it.

Our Price $46.55

Its first class in every particular **and we stake our reputation on its quality and wearing** ability. We give with each buggy sold, **a 2-years' guarantee. We ship this buggy or any of our vehicles subject to your inspection.** If not found exactly as we describe it in our catalogue and not satsifactory in every way you may return it at our expense. This is but one of the **many bargains offered in our Special Vehicle and Harness Catalogue.** We have all kinds of buggies, carriages, surreys, road wagons, phaetons, spring wagons, all kinds of single, double and team **HARNESS, SADDLES AND FLY NETS.** Send for our large **FREE CATALOGUE.**

Marvin Smith Co., 55-57-59 N. Jefferson St., T-92 Chicago.

In writing, mention Gleanings.

FOR SALE $2000. The BEST FAMILY TRADE in honey and maple syrup in U. S. A. Best clover and basswood honey was sold for 25 cts. per lb. the past winter. Personal introduction to about 2000 patrons. Refer to editor of *Gleanings.* Address

X Y Z, care of *Gleanings*, Medina, Ohio.

FOR SALE. Good ranch for bees and general farming, 15 miles north of San Diego, California.

G. C. GEARN,
864 Fifth St., San Diego, Calif.

WANTED.—To exchange or for sale, 25 colonies bees in 8-frame L. hives; fixtures, hives, foundation, and queens, for double wheel-hoe and beeswax.
F. H. MCFARLAND, Hyde Park, Vt.

Wants and Exchange.

Notices will be inserted under this head at one-half our usual rates. You must SAY you want your ad in this department, or we will not be responsible for any error You can have the notice as many lines as you please; but all over ten lines will cost you according to our regular rates. We can not be responsible for dissatisfaction arising from these "swaps."

WANTED.—To exchange comb foundation for wax. Write for terms to B. CHASE, Earlville, N. Y.

WANTED.—To exchange one automatic guage lathe and one broom-handle lathe toward a shingle saw, planer, or circular-saw mill or sticking machine.
W. S. AMMON, 216, 218 Court St., Reading, Pa.

WANTED.—To buy 500 bu. No. 1 dry rice popcorn.
GEO. G. WILLARD, 270 Pearl St., Cleveland, O.

WANTED.—To exchange eight-frame L. hives and combs, all complete for bees. F. R. RANNEY,
Box 66, Comstock, Kalamazoo Co., Mich.

WANTED.—Assistant in apiary, one that has had some experience, reasonable wages, steady employment, no liquor or tobacco.
M. P. RHODES, Las Animas, Colo.

WANTED.—Assistant in apiary and on the farm. Must be sober and industrious.
CHAS. STEWART, Sammonsville, Fulton Co., N. Y.

WANTED.—To exchange a Stahl's No. 4 spraying-outfit for good bucket pump, or offers.
H. FITZ HART, Dalkeith, Fla.

IF YOU NEED QUEENS

We can fill your orders by return mail. To use the words of our customers, with the "largest and finest queens you ever saw." These queens are not only fine looking, but are very prolific, and their bees are the best of honey-gatherers; that means strong colonies and full supers. Now, to prove that this is not all talk, send for our price list of Italian queens, and give us a trial order.

The choicest of tested queens, $1.00 each.
Untested, 75 cts. each; $8.00 per doz.

Safe arrival and satisfaction guaranteed on every order.

J. W. K. SHAW & CO.,
Loreauville, - Louisiana.

Albino Queens. If you want the most prolific queens; if you want the gentlest bees; if you want the best honey-gatherers you ever saw, try my Albinos. Untested queens, $1.00; tested, $1.50.
J. D. GIVENS, Lisbon, Texas.

IMPROVE YOUR BEES

by buying some of Hyde's improved strains of either golden Italians, three-band Italians, or Holy Lands. We know what good queens mean hence breed for honey, gentleness, etc. Send for 20-page circular of valuable information for the honey-producer. We do not rear poor queens, and do not compete with cheap breeders. Our prices, either race your choice: Untested, before June 1, $1.00; 6 for $5.00. Tested, $1.50. After June 1, untested, 75c; 6 for $4.25. Tested, $1.25. Discount for quantities. Breeding queens a specialty.

N. B.—For every $10.00 sent us for queens, we will, during August or September, mail one select tested queen, or for every $25.00 one fine breeder.
O. P. HYDE & SON, Hutto, Texas.

SUPERIOR HONEY QUEENS. Send for price list telling all about them.
LEININGER BROS., Ft. Jennings, Ohio.

For Sale Cheap. Thirty 1-story Root chaff hives complete, for extracted honey, with supers; 30 large Alley drone-traps; 20 nucleus hives, 3-frame; 25 supers for comb honey; no disease; in good repair.
W. E. PETERMAN,
Royersford, Montgomery Co., Pa.

Eggs for Hatching.

Barred and White Plymouth Rocks, Light Brahmas, single-comb White, Brown, and Buff Leghorns; rose-comb Brown Leghorns; Silver-laced and White Wyandotts, Partridge Cochins, Single and Rose Comb Black Minorcas, S. S. Hamburgs, and Pekin Ducks. Eggs, $1.00 for 15. Circulars and recommendations free.
Chas. H. Rue, Minerva, Ohio.

BLUE-BARRED PLYMOUTH ROCK EGGS from such mated strains as E. B. Thompson and J. W. Tanner, 15 for $1.00; 30 for $1.50.
JNO. M. WHEELER, Winchester, Ky.

EGGS FOR HATCHING, Barred Plymouth Rock, 75 cts. per 13; Pekin Duck, 75 cts. per 11.
C. J. BALDRIDGE, Kendaia, Seneca Co., N. Y.

POULTRY PAPER Twenty or more pages each month, nicely illustrated and UP-TO-DATE. Four months trial subscription 10 cents. One year [illegible] cents. Sample copy Free. Mention this paper. **Inland Poultry Journal, Indianapolis, Ind.**

Write Quick for circulars of *Cole's Garden Plow.* Best in use. G. W. Cole, Canton, Ill.

Black and Hybrid queens 30 cts. each. Mostly raised this spring from swarming-cells.
L. B. SMITH, Lometa, Texas.

Hybrid and mismated queens for sale, 20 to 30 cts. each. WILLIS MARROW, Wallaceburg, Ark.

You Can Buy

Groceries and

Bee-Supplies

at Wholesale Prices

by ordering in wholesale quantities of VICKERY BROS., Evansville, Ind.

They carry an immense stock of sugar, coffee, teas, canned goods, soap, candles, provisions, flour, oil, garden and field seeds, nails, fence-wire, wooden and willow ware, grocers' sundries, bee-hives, sections, foundation, comb, and general bee-keepers' supplies; buy and sell honey and beeswax.

ADDRESS

Vickery Bros., Evansville, Ind.

OPPOSITE POSTOFFICE.

DITTMER'S FOUNDATION!

AT WHOLESALE AND RETAIL.

This foundation is made by an absolutely non-dipping process, thereby producing a perfectly clear and pliable foundation that retains the odor and color of beeswax, and is free from dirt. Working wax into foundation for cash, a specialty. Beeswax wanted. A full line of supplies at the very lowest prices, and in any quantity. Best quality and prompt shipment. Send for large illustrated catalog.

GUS DITTMER, : : : AUGUSTA, WIS.

WESTERN BEE-KEEPERS

will save money and freights by buying supplies from

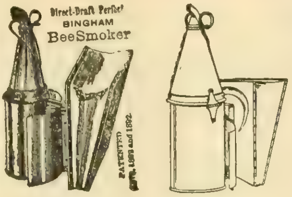
BARTELDES & CO., Denver, Colo.

20-page illustrated price list now ready.

Root's Goods in Kansas.

Carl F. Buck, Augusta, Butler County, Kansas.

D. COOLEY,
Dealer in **BEE-KEEPERS' SUPPLIES,**
KENDALL, MICH.
Root's Goods at Root's Prices. Catalog free.



BINGHAM SMOKER.

DEAR SIR:—Inclosed find $1.75. Please send one brass Smoke engine. I have one already. It is the best smoker I ever used. Truly yours,
HENRY SCHMIDT, Hutto, Tex.

MADE TO ORDER.

Bingham Brass Smokers

Made of sheet brass, which does not rust or burn out; should last a lifetime. You need one, but they cost 25 cts. more than tin of the same size. The little open cut shows our brass hinge put on the three larger sizes. No wonder Bingham's 4-inch smoke-engine goes without puffing, and does not drop inky drops. The perforated steel fire-grate has 381 holes to air the fuel and support the fire.

Heavy tin smoke engine, 4-inch stove per mail, $1.50; 3½-inch, $1.10; 3-inch, $1.00; 2½-inch, 90c; 2-inch, 65c. Bingham smokers are the originals, and have all the improvements, and have been the standard of excellence for 22 years. Only three larger ones brass.

T. F. Bingham, : : Farwell, Mich.

1881 **PAGE & LYON MFG. CO.** 1900

We manufacture a full line of the latest BEE-SUPPLIES.

Our motto is, "Perfect Goods and Prompt Shipment."

Send for our new free illustrated catalog.

PAGE & LYON MFG. CO., New London, Wisconsin.

Marshfield Manufacturing Company.

Our specialty is making SECTIONS, and they are the best in the market. Wisconsin basswood is the right kind for them. We have a full line of **BEE-SUPPLIES.** Write for free illustrated catalog and price list.

Marshfield Mfg. Co., Marshfield, Wis.

NOW READY!

64-page Catalog of Every Thing Bee-keepers Need.

Illustrated and fully described. Especially valuable to beginners for the information it contains. Send your address on a postal and get it NOW. Established 1884.

J. M. Jenkins, Wetumpka, Alabama.

Root's Goods for California.

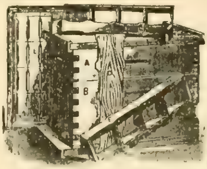
We have just received a large carload of sections, extractors, smokers, veils, etc., direct from the factory, and are prepared to supply bee-keepers with the same promptly. Do not send a long distance and pay high freights. Write for our prices.

M. R. MADARY, - Fresno, California.

California Queens... Of pure Italian stock. Yards exclusively for queen-rearing. Ten miles from any other bees. Untested, 90c; twelve for $9.00. Write for price list.

H. L. WEEMS, HANFORD, CALIF.

FOR SALE.—500 choice extracting combs at 10 cents each. JOHN F. WHITMORE, Grinnell, Iowa.



HONEY MONEY results from the best care of the bees. That results from the use of the best Apiary appliances. **THE DOVE-TAILED HIVE** shown here is one of special merit. Equipped with **Super Brood chamber, section holder, scalloped wood separator** and **flat cover.** We make and carry in stock a full line of **bee supplies.** Can supply every want. Illustrated catalogue **FREE**

INTERSTATE MANFG. CO., Box 12, HUDSON, WIS.

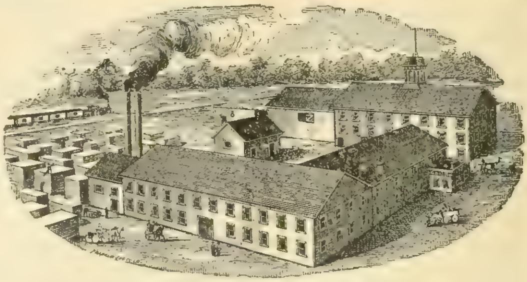
1200 FERRETS FOR SALE. Small, medium, and large sized; some trained. **First-class** stock. New price list free

N. A. KNAPP,
Rochester, Lorain County, Ohio.

BEE-SUPPLIES!

We have the best-equipped factory in the West. Capacity, one carload a day; and carry the largest stock and greatest variety of every thing needed in the apiary, assuring BEST goods at the LOWEST prices, and prompt shipment. We want every bee-keeper to have our FREE ILLUSTRATED CATALOG, and read description of Alternating Hives, Ferguson Supers, etc. *Write at once for a catalog.*

We also manufacture TANKS of either wood or galvanized steel, all sizes, any form, and for all purposes. Price list free.



KRETCHMER MFG. CO., Red Oak, Iowa.

That Honey-flow

is near. Are you prepared for it? Our catalog describes every thing a bee-keeper needs, and it is free. . . . .

Comb Foundation

is one of our specialties, and you will save money by getting our price on it. Untested Italian queens, 75c. Full colonies and nuclei at low prices. . . . .

I. J. Stringham, = 105 Park Place, = New York.

Apiaries at Glen Cove, Long Island.

Don't Buy

Supplies

Until you see my 40th annual catalog. A full line of hives and fixtures best adapted to our New England climate. Also best brands of **Comb Foundation and Section-boxes.** I have also made arrangements to keep quite a general stock of

A. I. Root Co.'s Goods at Their Prices.

Parties desiring these goods can get them of me, and **Save Freight Charges.** Bees, Queens, and Nucleus Colonies from the **very best strains** in America. A 40-page illustrated catalog free. Address

W. W. Cary,
Lyonsville, Mass.

$10.00 REWARD

To the party who sends me the most money for bees and queens between April 1 and Nov. 1, 1900. My 1900 untested queens ready to go

BY RETURN MAIL.

High-grade stock and not cut prices, my specialty.

1 untested queen, $1.00; 6 for $5.00; 12 for $9.00.
1 tested queen, $1.50; 6 for $8.00; 12 for $15.00.
Breeders, very best, $3.00 to $5.00.

Nuclei ready April 15. I have special express rates on bees.

One 1-frame nucleus, no queen, $1.00; 6 for $5.50; 12 for $10.00.
One 1-frame nucleus and queen, $1.75; 6 for $9.00; 12 for $17.00.
1, 2, 3, and 4 frame nuclei, 65c per frame to above prices for extra frames wanted.

For each dozen queens or nuclei ordered at above rates I will mail in August a **SELECT TESTED QUEEN.**

Just received, a carload of Root's goods, which I am selling at Root's prices plus carload-rate freight.

Bees, Honey, and Beeswax bought and sold.

W. O. VICTOR,
Wharton, Texas.

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Honey Column.

CITY MARKETS.

BUFFALO.—No accumulation of honey in our market. Now and then a little arrives, and sells quickly if in good order. Fancy, 15@16; A No. 1, 14@15; No. 1, 13@14; No. 2, 12@13; No. 3, 10@12; dark, 10@12. Glass tumblers (white) $1.25@$1.35. Extracted, 7@7½; dark, 5½@6. Beeswax, 27@30.
May 10. W. C. TOWNSEND, Buffalo, N. Y.

KANSAS CITY.—The receipts and stock on hand are light, demand fair. We quote No. 1 white comb, 14@15; No. 1 amber, 13@14; No. 2 white and amber, 13@13½. Extracted, white, 7½@8; amber, 7. Beeswax, 22@25.
C. C. CLEMONS & Co.,
May 9. Kansas City, Mo.

WANTED.—To buy honey. Should like to hear from parties having extracted honey to offer, and their best price, delivered at Cincinnati. I pay cash on delivery.
C. H. W. WEBER,
Suc. to C. F. Muth & Son, Cincinnati, Ohio.

WANTED.—Comb and extracted honey. State price, kind, and quantity. R. A. BURNETT & Co.,
163 South Water St., Chicago, Ill.

FOR SALE.—100 lbs. of good ripe fruit-bloom honey, in cans; 8c per lb.
EDW. SMITH, Carpenter, Madison Co., Ill.

KIND WORDS FROM OUR CUSTOMERS.

We have 100 stands of bees, and run for comb honey. Last year we tried the fence separator, and liked it so well that we bought new furniture for all our old supers. We use your 8-frame Dovetailed hive exclusively, and think there are no better goods made than are sent out by your house. THORN BROS.
Umatilla, Ore.

Dear Friend Root:—I herewith inclose $8.00 for the starving people of India. A part of it was collected in a small Sunday-school. The rest is from my brother and myself. CHAS. HERMANN.
Durango, Iowa, May 1

HOW AN ADVERTISEMENT BROUGHT RETURNS.

Please stop that ad't of "Wanted, a man with small family." Goodness! I had no idea there are so many men who read GLEANINGS who want a job. Now, if you don't stop that ad't I shall not be able to answer all the letters this summer. GLEANINGS is a "hummer" to advertise in. If I wanted a wife I should be afraid to let GLEANINGS know any thing about it for fear I should have more on my hands than I know what to do with. With many thanks and best wishes for the future I remain yours truly,
Kearney, Neb., Mar. 1. S. M. ALEXANDER.

FACTS About Bees.
REVISED EDITION.
How to get
GILT-EDGED HONEY
Send 2c stamp to
THE A. I. ROOT CO.,
Medina, Ohio,
or F. Danzenbaker,
Box 66, Washington, D. C.
DANZ. HIVE

Albino Queens. If you want the most prolific queens; if you want the gentlest bees; if you want the best honey-gatherers you ever saw, try my Albinos. Untested queens, $1.00; tested, $1.50.
J. D. GIVENS, Lisbon, Texas.

ITALIAN BEES and QUEENS FOR SALE
Queens, $1.00; bees, by the pound, $1.00; nuclei, two frames, with queen, $2 00; one frame, $1.50; full colonies, $4.00.
MRS. A. A. SIMPSON, Swarts, Pa.

POULTRY PAPER Twenty or more pages each month, nicely illustrated and UP-TO-DATE. Four months trial subscription 10 cents. One year 25 cents. Sample copy Free. Mention this paper. **Inland Poultry Journal, Indianapolis, Ind.**

EGGS FOR HATCHING, Barred Plymouth Rock, 75 cts. per 13; Pekin Duck, 75 cts. per 11.
C. J. BALDRIDGE, Kendaia, Seneca Co., N. Y.

Write Quick for circulars of *Cole's Garden Plow*. Best in use. G. W. Cole, Canton, Ill.

We have just bought 100 colonies of bees. Some have mismated queens, some are hybrids, and some nearly black. Will sell these queens (if taken within the next few weeks) at 35 cts. each, or three for $1.00.
H. G. QUIRIN, Parkertown, Ohio.

Wants and Exchange.

Notices will be inserted under this head at one-half our usual rates. You must SAY you want your ad. in this department, or we will not be responsible for any error. You can have the notice as many lines as you please; but all over ten lines will cost you according to our regular rates. We can not be responsible for dissatisfaction arising from these "swaps."

WANTED.—To exchange comb foundation for wax. Write for terms to B. CHASE, Earlville, N. Y.

WANTED.—To buy 500 bu. No. 1 dry rice popcorn.
GEO. G. WILLARD, 270 Pearl St., Cleveland, O.

WANTED.—To exchange Norway spruce, Scotch pine, and arbor-vitæ trees, from 1 to 3 feet high, at $1.00 to $2.00 per dozen, for beeswax or any thing useful in an apiary.
C. B. HOWARD Romulus, N. Y.

WANTED.—Young man over 18 years old to work on farm. Must be reliable, temperate, and understand farm work. Give references. Write
CHAS. McCLAVE, New London, O.

SPECIAL NOTICES BY BUSINESS MANAGER

FAULTLESS SPRAYER.

The time for fighting potato-bugs is at hand, and you will find nothing equal to the Faultless sprayer for the purpose. Prices for quantities on application.

WIRE NETTING.

Two months ago we announced in this department higher prices on wire poultry netting. Owing to recent decline in nails and other metals in the general market we mark prices down ten per cent on wire netting, although there has been no change in the cost to us as yet. See description and price list on another page. We will furnish netting from our own stock here, while it lasts, at an extra discount of 5 per cent. We still have most of the 3-inch mesh No. 18 netting, mentioned in March 15th issue. This makes an excellent trellis for peas and beans and other vines, and is very cheap at the prices offered; viz., 18 rolls of 18-in. at $1.20 per roll; 6 rolls of 24-in. at $1.60 per roll.

SPECIAL FOUR-FRAME AUTOMATIC REVERSING EXTRACTORS.

During the past year we have acquired the Bayliss patent for an automatic reversing honey-extractor which has been manufactured for the last ten years by the Goold, Shapley & Muir Co., of Brantford, Canada. We have not thought best yet to undertake the manufacture of these machines for this country, but we have in stock three machines suited for four L. frames. Two of these were in stock at Chicago some time, and I believe were in the exhibit of the G., S. & M. Co. at the World's Fair. The other machine was sent to us as a sample when we were considering the purchase of the patent. We offer these machines for sale at $15.00 each, and shall be pleased to hear from any who are interested, and who desire further particulars. The cans are made of heavy tin plate, and the inside iron work is tinned also. The reels are not as strongly built, and the comb-pockets are not as well braced, as our regular Cowan extractors; but similar machines are doing excellent service for many bee-keepers in Canada.

POST-CHECK MONEY.

In the January 15th issue of GLEANINGS I called attention in this department to a proposed form of currency called "post-check" money, briefly describing it and calling attention to a few of the advantages that would be derived from its use. A bill was introduced, March 16, 1900, in both houses of Congress, under the title, "A bill to prevent robbing the mail, to provide a safer and easier method of sending money by mail, and to increase the postal revenues."

We are constantly annoyed by losses of small amounts remitted to us in the mail by present methods. Very often during the warm summer weather we receive postage-stamps all stuck fast to the letter accompanying, or to each other, and it is about all they are worth to soak them off, regum, and use them. If you could appreciate one-tenth as much as we do the great convenience and saving this post-check money would secure to the great mass of the people who have to transact some of their business by mail you would sit down at once and write a letter to your United States Senators, urging the importance of passing at an early date Senate bill No. 3643. And you will write another letter to the Representative from your district in Congress, urging his support of House bill No. 9632, the "Post-check" bill. In order that you may become more familiar with the bill and the post-check money it proposes to provide, the great convenience it will furnish the mass of the people, send a stamp to C. W. Post, Battle Creek, Mich., with request for pamphlet on post-check money; ask for several if you can place them in the hands of those who will be interested and would be likely to urge the passage of the bill by a personal letter to your Representatives in Congress. Do not put this off, but write at once. Remember that the interests of the express companies in the fees from their money-order business may induce them to work in opposition to the bill, and the active support of the people is required, not only to offset this opposition, but to bring such a pressure upon your Representatives as will make them feel that the people are back of this measure, and desire its enactment into law. It may also assist the cause to write to Postmaster-General Smith and to the Secretary of the Treasury, Lyman J. Gage, requesting them to use their influence in support of the post-check bill now before Congress.

Special Notices by A. I. Root.

CRIMSON CLOVER—ADVANCE IN PRICE.

I suppose this is good news for those who have seed for sale, or who are growing seed; but it may not be so good for those who wish to buy At the present time we can not get any crimson-clover seed so as to sell it for less than $5.50 per bushel; half bushel, $3.00; peck, $1.75; 1 lb., 10 cts.; by mail, 10 cts. per lb. extra.

SWEET-CLOVER SEED NOT TO BE HAD IN THE MARKET.

Is it not a little funny that there is a large demand for sweet-clover seed just now, and none to be had, even among the large seedsmen, while it is only a little while since some of the brethren made such a clamor because we would not admit it was a noxious weed? The idea that any one of the clovers should be classed with pernicious weeds sounds almost like a joke.

ONION SEED FOR GROWING SETS, AT A BARGAIN.

We have on hand 20 lbs. of Yellow Danvers, and about 30 lbs. of large Red Wethersfield seed, which sold a month ago at $1.00 per lb. This seed is just what you want for growing sets, and it may be sown for sets any time from now until July 1—probably the sooner the better. While it lasts we will make a special price of 60 cts per lb. for the Yellow Danvers, and only 50 cents for the Red Wethersfield. All that is necessary to grow sets is to sow the seed so thickly in drills that they will not have room to make large onions. The ground should be rather poorer, also, and the seed is usually sown later, as I have mentioned.

MANUM'S ENORMOUS POTATO, AND OTHER POTATOES FOR SEED.

We have just purchased quite a lot of the Enormous, grown by the Ohio Experiment Station, at a price so low we can offer a whole bushel (worth $1.25 in table in last issue) as a premium for one new subscriber. A large number of the different experiment stations in different States have placed this potato almost at the head for yield, quality, endurance against scab, blight, and every thing else. We think these are a bargain. We have also quite a lot of seconds (our own growing) and will send a bushel for every dollar sent for GLEANINGS. This potato is a desirable one for late planting, for the reason that it keeps later in the season without sprouting than almost any other.

We can still furnish a barrel of potatoes as a premium for every new name of the following: Monroe Seedling, Mills' Prize, Carman No. 1, and Poor Man's Friend. Of course, these are all seconds. We have a good stock on hand, in good order, of firsts as follows: Sir Walter Raleigh, Carman No. 1, the New Russet (almost if not quite scab-proof), and Craig. The latter potato, at present writing, is as fine an eating potato as we have in our whole assortment, not even excepting the Freeman. It is one of the kind that is really better for eating in the spring than either in the fall or winter. We have small lots of potatoes of almost every thing in our list; and we will give 50 cents' worth to everybody who sends a dollar for GLEANINGS—past, present, or future, and a dollar's worth to everybody who sends us a new name as before explained. All of our potatoes are in better order than we have ever had before at this season of the year. As we go to press, crimson clover is just coming into bloom, so we shall soon commence planting our own crop. When potatoes are cheap we find it profitable to put a good-sized one, or a large piece of one, in every hill. Some years ago, when potatoes were very low, we planted as many as 30 bushels to the acre, and secured a crop of over 400 bushels to the acre. Of course, every thing was in tiptop shape in every way we could make it so.

Finally, for every dollar sent us for potatoes you may have GLEANINGS for six months, free of charge.

Sharpless Cream Separators—Profitable Dairying.

Sections, Sections!!

With a view to extending the circulation of the REVIEW I make the following special offers: For only $3.50 I will send the REVIEW for 1900, and twelve back numbers, and 1000 strictly first class one-piece sections. The REVIEW and 2000 sections for $6.00; the REVIEW and 3000 sections for $8.75; the REVIEW and 5000 sections for $13.00.

W. Z. Hutchinson, Flint, Mich.

"Superior" Doolittle Cross.

My queens are bred from Doolittle's very best breeders, and the drones in my apiary are of W. Z. Hutchinson's "Superior stock." In this cross you are enabled to get the essence of years of careful breeding.

"It is well understood that the *further north* either animal or vegetable life is developed, the better that development is."

J. J. Hill (extract from an address).

Here is a point that may well be considered when purchasing queens. Send for circular giving fuller particulars, and with it will be sent "How to Build a House-apiary" (illustrated). Untested queens, $1.00 each; $5.00 for 6; $9.00 for 12.

JEWELL TAYLOR, Forestville, Minn.
Money-order Office, Spring Valley.

BEES THAT GET THE HONEY.

"I bought fifteen queens last year. The six I got from you have about completed their first supers, 30 sections. None of the others have yet entered theirs."

W. W. Erb, Ashland, Oregon, April 22.

The above explains why my customers "stick to me." They like nice gentle bees that pile up the honey. No pains is spared to have *every queen* as *good as possible*. A few last year's select, $2.00. Breeders, $3 to $4.00. Untested, 75 cts.; six for $4.00; dozen, $7.50; for select, add 25 cts. each. No culls sent out. Circular free. See GLEANINGS, April 15

J. B. CASE, Port Orange, Fla.

REMOVED!

EARLY QUEENS. W. H. Laws has removed his entire queen-rearing apiaries to Round Rock, Texas, where he will be better fitted than ever to fill orders for the LAWS strain of FAULTLESS 5-BANDED bees the coming season. BREEDING QUEENS always on hand. Price $2.50 each. I am also breeding the leather-colored stock from imported mothers. Tested queens, either strain, $1.00; 6 for $5.00; untested, 75c; 6 for $4.00. Queens ready in season.

W. H LAWS, Round Rock, Texas.

We are Headquarters for the Albino Bee.

The Best in the World.

If you are looking for the bee that will gather the most honey, and the gentlest of all bees in handling, buy the Albino. I also furnish the Italian, but orders stand 50 to 1 in favor of the Albino. I manufacture and furnish supplies. Address

S. Valentine, Hagerstown, Md.

QUEENS, GOLDEN ITALIANS. Unexcelled for business, beauty, and gentleness. Bred from the best of stock obtainable. Untested, 70 cts. each; 6 for $3.75. Tested, $1.00 each. Extra fine breeding-queens, $2.00 each. E. A. SEELEY, Bloomer, Ark.

Adel Bees Did it.

San Louis, Col., March 2, 1900.

Last spring (1899) I ordered queens from 5 different queen-breeders, and among them one from you. The bees from your (Adel) queen gathered more honey than the others all put together. (Signed) S. N. Smith, M. D.

Send for descriptive circular and full price List. Tested queens, each $1.50.

HENRY ALLEY, : Wenham, Mass.

Queens.

Use No Smoke. It is not necessary with the **Sweetheart** strain of bees. A postal card or letter will bring my descriptive circular and price list of these **gentle hustlers** and other strains. I am booking orders for them now, which will be filled in the order received. Don't delay.

A. J. WRIGHT,
Bradford, Steuben Co., N. Y.

1900. Established 1872.

ITALIAN QUEENS.

My bees are good honey-gatherers; work well on **Red Clover.** Healthy and beautiful. One untested queen, 65 cts.; 2 for $1.25; 1 warranted, 80 cts.; 2 for $1.50 1 tested, $1.25; 1 select tested, $2.00. Satisfaction guaranteed or money refunded. Queens sent in season. **C. M. HICKS, Hicksville, Wash. Co., Md.**

Florida Queens.

NOW READY FOR DELIVERY. They are **healthy, prolific, industrious, and gentle.**

Laying Queens at	$1.00,	or $10 00 per dozen.
Virgin "	75 cts.,	7.00 " "

JNO. L. MARVIN, Jacksonville, Fla.

IMPROVE YOUR BEES

by buying some of Hyde's improved strains of either golden Italians, three-band Italians, or Holy Lands. We know what good queens mean hence breed for honey, gentleness, etc. Send for 20-page circular of valuable information for the honey-producer. We do not rear poor queens, and do not compete with cheap breeders. Our prices, either race your choice: Untested, before June 1, $1.00; 6 for $5.00. Tested, $1.50. After June 1, untested, 75c; 6 for $4.25. Tested, $1.25. Discount for quantities. Breeding queens a specialty.

N. B.—For every $10.00 sent us for queens, we will, during August or September, mail one select tested queen, or for every $25.00 one fine breeder.

O. P. HYDE & SON, Hutto, Texas.

FOR SALE. Ten colonies of Italian bees in ten-frame hives. $5.00 per colony, f. o. b cars at Monterey. E. R. MUNN, W. Monterey, Clarion Co., Pa.

The A. I. Root Company,

10 Vine Street,

Philadelphia, Pa.

Direct Steamer for Florida, Georgia, North and South Carolina, Virginia, Maryland, Delaware, and all points East and South.

All orders sent to Philadelphia office will have same attention and care as Medina. 1900 goods now in stock. Order before further advance. . .

* * *

These 4 Queens for Only 25c.

But remember, "these four queens" are on *four celluloid buttons*, each made with a pin. to be worn on the coat-lapel of every bee-keeper. The queen is shown with gold tinge, and the words are printed just as shown. A queen-bee on the coat will cause people you meet to ask questions about the busy bee, and many a conversation thus started will likely result in the sale of more honey, or give the wearer a chance to enlighten people in regard to honey and bees. Of course, YOU will want one of them, and then will give the other three to the boys or girls in the family, who will wear them delightedly.

American Bee Journal and 4 Queen Buttons for Only 50c.

For only 50 CENTS we will mail to a NEW subscriber the four buttons, and the BEE JOURNAL every week from time the subscription is received until end of this year (1900).

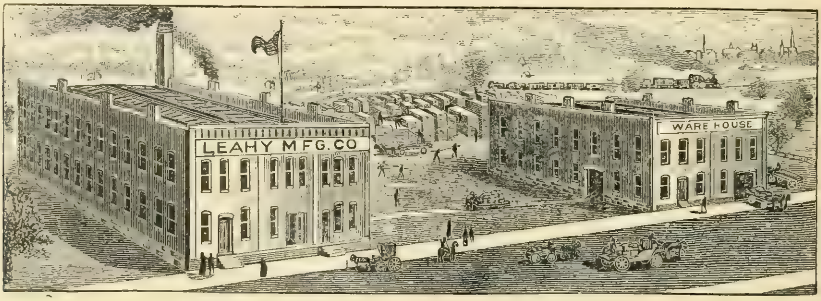
A Dr. Miller Honey-queen,

if preferred, will be sent with the BEE JOURNAL for the same time (instead of the buttons), to a NEW subscriber, FOR ONLY $1.00. These queen-orders will be booked now, and filled in rotation after June 1. (See page 292, Gleanings for April 15.)

Geo. W. York & Co., 118 Mich. St., Chicago.

Catalog and sample copy of the weekly American Bee Journal free. Send for them. Address above.

Headq'ters in Chicago for Bee-keepers' Supplies.



For Apiarian Supplies, address **LEAHY MFG. CO.** Higginsville, Mo.
1730 S. 13th St., Omaha, Neb.
East St. Louis, Ill.

GLEANINGS IN BEE CULTURE

A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS.

ILLUSTRATED SEMI-MONTHLY

Published by THE A. I. ROOT CO. $1.00 PER YEAR MEDINA, OHIO.

VOL. XXVIII. MAY 15, 1900. No. 10.

STRAY STRAWS FROM DR. C. C. MILLER

THE STRIKING STATEMENT is made in *Review* that J. F. Otto keeps from 250 to 300 colonies in one apiary in Wisconsin, and that in many cases he has had two queens living together more than a year in one colony.

PROF. CARLET has pointed out in *Le Naturaliste* that the books are wrong in saying that no wax is secreted by the first and last ventral rings. The first and second secrete none, and of the remaining four the last secretes the most.

WHATEVER the advantage of equalizing in any case, there is one objection. If you mix bees in any way, it hinders keeping exact tally of the performance of each queen in surplus, and that's important if you are breeding for improvement.

FIVE TO TEN DAYS before the commencement of the honey-harvest you wish all of your increase made, says Bro. Doolittle, p. 351. Right, for his locality, his chief harvest being linden. Wrong for my locality, with little linden to speak of, and clover the main harvest.

THE MEMBERSHIP of the N. B. K. A. is a little more than 500. It's sad that it's so small; but there's encouragement in the thought that never before were so many bee-keepers banded together in one body in the country. And the number is all the time growing.

UNCLE LISHA, have you been keeping close watch of Doolittle? Page 347 you make him stand with Deacon Strong in believing bees will swarm, and it's best to let 'em. I think that's where he used to stand; but I doubt that there's another man in the ranks to-day with his teeth shut tighter with the determination to find a plan to head off the bees from swarming.

IN WORKING BEES from other frames to Dovetail frames, one way is to put the hive with brood over the Dovetail hive, an excluder between, the queen below. But the queen is very slow about laying, apparently thinking she ought to get above to lay. A better way is to brush all bees from the old comb into the new hive, and put the beeless brood over another strong colony with excluder. If desired, this brood may be put back over its original queen ten days later.

JOHN R. MILLARD gets some sound instruction on page 352. The problem being to get a stock of drones from a choice young queen, this might be worth trying: Add brood from other colonies so as to get the young queen's colony very strong. Then have plenty of drone comb in one or two of the central combs. As soon as the queen fills these drone-cells, take the comb and give to another colony, and replace with fresh drone comb as fast as taken away. [The idea is a good one, and we will adopt it in our queen-rearing yard.—ED.]

FRIEND A. I. ROOT, if you want to see an ivy-leaved geranium at its best, grow it in a hanging pot. Some of them have foliage with a delightful fragrance. Rub a leaf lightly between the thumb and fingers, then smell your fingers. [You probably had it hung up in your house; but unless you and Emma or Mrs. Miller particularly called my attention I should never see it. I am really sorry that I do not appreciate and admire flowers; but I do admire landscapes, photographs, and in general all art work of the decent sort.—ED.]

A. GUSTIN says in *Le Rucher Belge* that his bees when working 1½ miles away brought no pollen. The number of pollen-bearers increased on nearing home, the most being found within ten rods of the apiary. [This is an interesting fact—none the less so because I believe it to be true. Just now while the dandelions are out in profusion, and from which bees get but little if any honey, those yellow heads nearest the apiary have the most bees on. Those bees that come from a distance seem to be either carrying water or honey from the willows.—ED.]

EQUALIZING COLONIES is all wrong. And it's all right. Depends. In the spring, take two colonies, one with three frames filled with brood, the other with enough brood in three frames to make one full frame. Take a frame full of brood from the strong and give to the weak, and you have equalized the brood. Three weeks later there will not be as much brood in the two hives as if you had let them alone. But let them alone till the stronger has six or eight frames of brood, and then you will gain by equalizing. The secret of it is that a colony with brood enough to fill only one frame full stands nearly still, while one with three or four frames booms right along. [I guess you are right.—Ed.]

Doolittle talks sense, p. 350, when he favors leaving queen-cells and young queens with the bees from start to finish. And he will probably agree that for the best results it is desirable that the cells be in a strong colony at least till they are sealed, and that it is at least a little better that the young queen be in a strong nucleus till she lays. We are not likely to reach the time when good queens can be reared for nothing. [I have said a good deal in favor of bees for business, and have rather decried the evident rage for color, which rage now seems to have all but died out. Would it not be well to talk about high-priced queens? One reared by the most approved plans in a strong colony, under the swarming impulse, or same impulse brought on artificially by feeding, ought to be worth twice as much as one reared in the old-fashioned method in a queenless colony without feeding—a method that is apt to result in small, inferior queens —Ed.]

Geo. G. Scott takes up half a column of the *American Bee Journal* in saying that hive tools and other things likely to be lost should be painted a brilliant red. The advice is worth all the room he has taken. [Say, you are just right. I am one of those unfortunates who have a habit of losing tools in the apiary; and then I have walked all over them in a search for them, and have not seen them. Painting all such tools a bright red, forming a strong contrast with the grass and surrounding objects, would, I think, save a great deal of annoyance, and perhaps in some cases some "self-cussing." W. L. Coggshall manages to remedy this trouble to some extent by having his tools tied to him with a string. Of course, it would be impossible to paint a smoker this color; but screwdriver, pries, etc., could be painted red. This idea strikes me so favorably that I have just marked a heading for our A B C book, entitled "Tools," and in it I shall give friend Scott credit.—Ed]

Mr. Editor, you've got me all mixed up about Devauchelle and Bingham. I think you are right that both believe in strong colonies; but Devauchelle thinks the best thing for a poor locality is a big brood-chamber all the time, while friend Bingham says, "The time is likely to come when such a hive in a poor locality may be the only means of getting nice honey in paying quantities." And by "such a hive" doesn't he mean one reduced to a very small brood-chamber? Perhaps the main point of difference is that Bingham believes in contracting for the honey-flow, and I lean in the direction of the smoker man. [I do not see how you should be mixed up, doctor. Mr. Bingham, I take it, is an expansionist—if not politically, then apiculturally—that is, I take it he believes in a small hive for a poor locality, and a large hive for a good one, because he can have a large or small hive at will. Now, is it not possible that Devauchelle has a large hive which he can not reduce? You know it is easy for us to believe that what we have is just right; and it is also easy to confine our ideas and practices by the limits of the devices we use. Of course, you and I are not guilty of any such bad things; but Devauchelle *et al.* are.—Ed.]

Have you tried the French way of using the Porter escape? Instead of having the escape open into the hive below, have it open *outside*, in front, above the hive. One advantage claimed is that you can see if the springs of the escape do not work exactly right. [This method is all right under some conditions. H. R. Boardman has practiced it for years, and I do not know but he is using it now. It has the advantage, according to Mr. Boardman, of getting the bees out of the supers a little quicker, because the bees work toward bright daylight. The young bees that happen to be in the supers come out in front of the hive, and naturally find the entrance, so none are lost; but as a general rule Porter escapes are put on at night between brood-nest and sections, and the next morning the supers are *supposed* to be free of bees; but according to my experience they are not *always* thus freed, for I have found anywhere from thirty to forty bees in the super next morning. I suppose H. R. Boardman, by his plan, induces the bees to leave earlier, with the result that the work is accomplished in less time, and more thoroughly. It might be well to try this matter this coming season.—Ed.]

A hard thing it is to be always clear and not take too much for granted as being known by the inquirer. At least it's hard for me, and I see ye editor keeps me company, p. 253. A raw recruit would understand that in all cases stimulative feeding is necessary, and that the queen-cells must be in the same story in which the queen is laying. I don't believe he thinks either necessary in the time of full flow in hot weather. There, I've made the very same mistake by not saying that I'm talking about the reply to E. J. B. about queen-rearing. [There, now, doctor, you mix me all up. Instead of giving the right page, 352, you read the figures backward, and make it 253. Well, I have found the place now, and we will start over. In my remarks in question I had in mind the season during which they would come before our readers, which would be from the fore part till the middle of May, and I do not know of any place in the United States in which there will be a natural honey-flow then unless it be in the extreme south. However, your point is well taken, for a beginner reading what I said, in the month of July or June, would in all probability feed during the entire honey-flow. While this would do no harm, it would do no good, and might teach the colony to become lazy.—Ed.]

PICKINGS FROM OUR NEIGHBORS' FIELDS.

BY "STENOG."

Drying winds and heavy frosts,
Now and then a rain;
Things are mixed. and so betwixt
The bees get little gain.

AMERICAN BEE JOURNAL.

A correspondent asks C. P. Dadant if whisky fed to bees in honey would not make them bold enough to rob other people's bees. Mr. Dadant disposes of so foolish an idea by saying what ought to suggest itself to every one, that bees know nothing about human ownership. They care for nothing but their own needs as a colony. Wherever they can get honey, though out of an adjoining hive, they will do so, no matter who owns it. There is no doubt that the effect of whisky so administered would be injurious.

*

The Department of Agriculture, in the last Year Book issued, classes sweet clover among the pleasanter weeds. Mr. Dadant says, "If an out-yard or a waste corner is to be left growing in weeds, it is much better for it to produce such a plant as sweet clover, which spreads a pleasant smell in the air, injures no one, and enriches the soil, while, on the other hand, it may be very readily destroyed if need be, than to have it overgrown with the stinking ragweed, the poisonous jimson weed, or datura stramonium, or thistles. The opposition to sweet clover as a weed where weeds must grow is beyond my understanding, for I have never known this weed (?) to do any harm to any one, as it is most readily exterminated when the soil it occupies is put under cultivation."

BRITISH BEE JOURNAL.

The Transvaal and Orange Free State Governments have prohibited, under severe penalties, the sale of any thing, not the natural product of the bee, under the name of honey. Syrups may be sold as such as long as they are not called honey.

*

An Italian bee-journal reports the case of a girl in Switzerland suffering severely from poverty of blood, and who could get no relief through medicine. At last she tried a honey cure, which restored her to permanent health in something over a month. The treatment was as follows: Morning and evening, honey dissolved in hot milk; honey water at will. Honey taken during the day, in all about 2 lbs. each week.

*

A charge of adulteration of honey was recently brought before the authorities in Cologne, Prussia. Wm. Jaegersberg, a wholesale dealer, was sentenced to a fine of $250, his wife to $75, and the auctioneer who had been selling the stuff, to $5.00 and six weeks' imprisonment. Jaegersberg had carried on a large business, supplying a number of tradesmen under a guarantee of pure honey. During 1898 and '99 he disposed of 67,397 lbs. of manufactured honey, consisting of four-fifths syrup and the rest honey. To us on this side of the water it looks as if they were having a paroxysm of honesty in Europe. Such frauds and poisoners general get no mercy there when detected.

LE PROGRES APICOLE.

A merchant, R. Hornik, of Beuthen, Upper Silesia, had in stock 1300 kilograms of honeyed syrup, which he sold for pure. Taken before a tribunal he was fined $75 for violating the law concerning adulteration of food. In Schleswig Holstein the inspectors have taken not less than eight samples of honey adulterated with sugar syrup. The editor says, speaking for his own country, Belgium, "We have also a law designed to repress the adulteration of honey; but the eye of the inspectors seems to be obstinately closed in regard to the introduction into the country of a lot of mixtures that have no honey about them but the name." Our thanks are due to the editor for his friendly remarks concerning the Home of the Honey-bees, based on an article written by Mr. J. Verlinden.

GENERAL CORRESPONDENCE

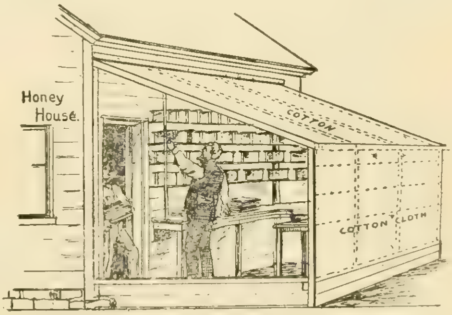
BLEACHING TRAVEL-STAINED COMB HONEY.

The Full Process Explained; a Valuable Article.

BY A. E. WHITE.

I will try to tell you how we bleach travel-stained honey. We first fumigate with sulphur, then place the combs where the sun will shine on them, and that is the whole process.

I build a frame on the south side of my honey-house, and cover the same with cotton cloth. A door opens from the honey-house into this room. I place shelves on the side and ends of this room, the bottom shelf being a wide board to be used as a table. I place



WHITE'S BLEACHING-HOUSE FOR SOILED COMB HONEY.

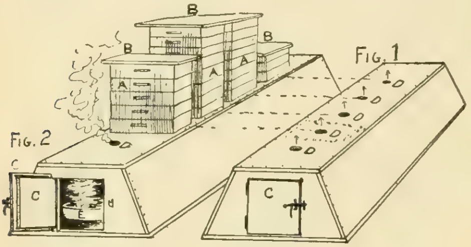
the combs on these shelves so that the sunlight will strike them. Dark combs will require several hours. This plan will whiten dark combs here in California. If you fumigate a few combs, then place them on a window-sill where the sun will shine on them, you will be convinced.

In placing the sections on shelves in the morning, I find the following plan good: On the shelves at the east and west end of the room I place sections end to end lengthwise of the shelves, two rows on each shelf, one row on the outer and the other on the inner edge. The morning sun strikes one side, and the afternoon sun the other side. On the front shelves I set them crosswise of the shelf, far enough apart *so as not to shade each other.*

I pack them away every evening; all not white I put out again next morning. Some of them will bleach quite slowly, but I have been able to whiten the worst ones by perseverance.

HOW TO MAKE THE SULPHUR-BOX.

Perhaps your readers would like to have a handy arrangement for fumigating honey or combs. I make a box like a watering-trough, the bottom as wide as my hive is long. I place this bottom side up where I want to use it. In one end I put a door to allow me to put in an iron dish holding the sulphur. About two feet from this end I bore a two-inch hole; measure off the width of my hive, and bore holes on down the box. I place the supers over these holes; tier up, and cover the top one. If my combs are stained I sulphur thoroughly, keeping them in the furnace two or three hours. If this box is placed in some building, hives filled with combs may be kept free of moths by fumigating once in a while.



WHITE'S SULPHUR-BOX FOR BLEACHING.

Pala, Cal., Mar. 27.

[I will explain to our readers that I sent the manuscript to our artist, requesting him to make drawings, and submit the same to Mr. White. These were approved after some slight changes had been made, and we now submit them showing Mr. White's idea.

When I visited Mr. Walker's place in Chicago, I learned, as I have already explained in these columns, that Mr. W. could bleach only one kind of soiled cappings, and that was the kind made yellow by propolis or pollen stains. But he makes use of the sun's rays only. Mr. White does not state whether there are some kinds of travel-stained, pollen-stained, or dirt-stained sections that he can not bleach. In the absence of any statement to that effect, we are led to believe that he is able to bleach all kinds of soiled-faced comb honey. According to Mr. Walker's experience he bleaches by sunlight alone, and that only one kind of discolored section; but as Mr. White makes use of sulphur, a well-known active bleaching agent used in the arts, we may assume that the sulphur is a part of the process; and what is not accomplished by this agent is completed by the direct rays of old Sol. I am sure our readers would like to hear from Mr. White as to whether he is successful in bleaching *all* kinds of discolored sections.

If he is, he is the first to announce the fact. To be able to bleach any kind of section would sometimes make all the difference between profit and loss in the net earnings of an apiary. In extreme cases 75 per cent of the crop is stained, and only 25 per cent would sell at the top of the market. The difference between discolored goods and pure white is anywhere from one to five cents—suppose we say three; and let us imagine, for instance, that the crop of honey was 10,000 lbs., $\frac{3}{4}$ of which is stained. If all of it were pure white, and brought 15 cents, the crop would net us somewhere about $1000 after deducting commission, cartage, freight, breakage, leakage, etc. But only $\frac{1}{4}$ will bring the 10 cents net, or which would mean $250. The balance at 8 cents would net only $600, or a total of $850. Now, then, *if* the 7500 lbs. could be bleached so as to bring the same price as the 2500 lbs., the process would save us a clean $150, less the cost of handling and bleaching, which would be small.

In the foregoing figures I am taking the basis that when comb honey is quoted at 15 cts., the bee-keeper is supposed to get net (after taking out commission, freight, cartage, breakage, leakage), 10 cts. Several expert honey-salesmen once figured this out in Chicago at one of the meetings, basing their figures on actual experience; and we were all surprised to find that $\frac{1}{3}$ of the actual market price was absorbed in commissions, freight, drayage, and I might say occasional pieces of rascality on the part of unscrupulous commission men. —ED.]

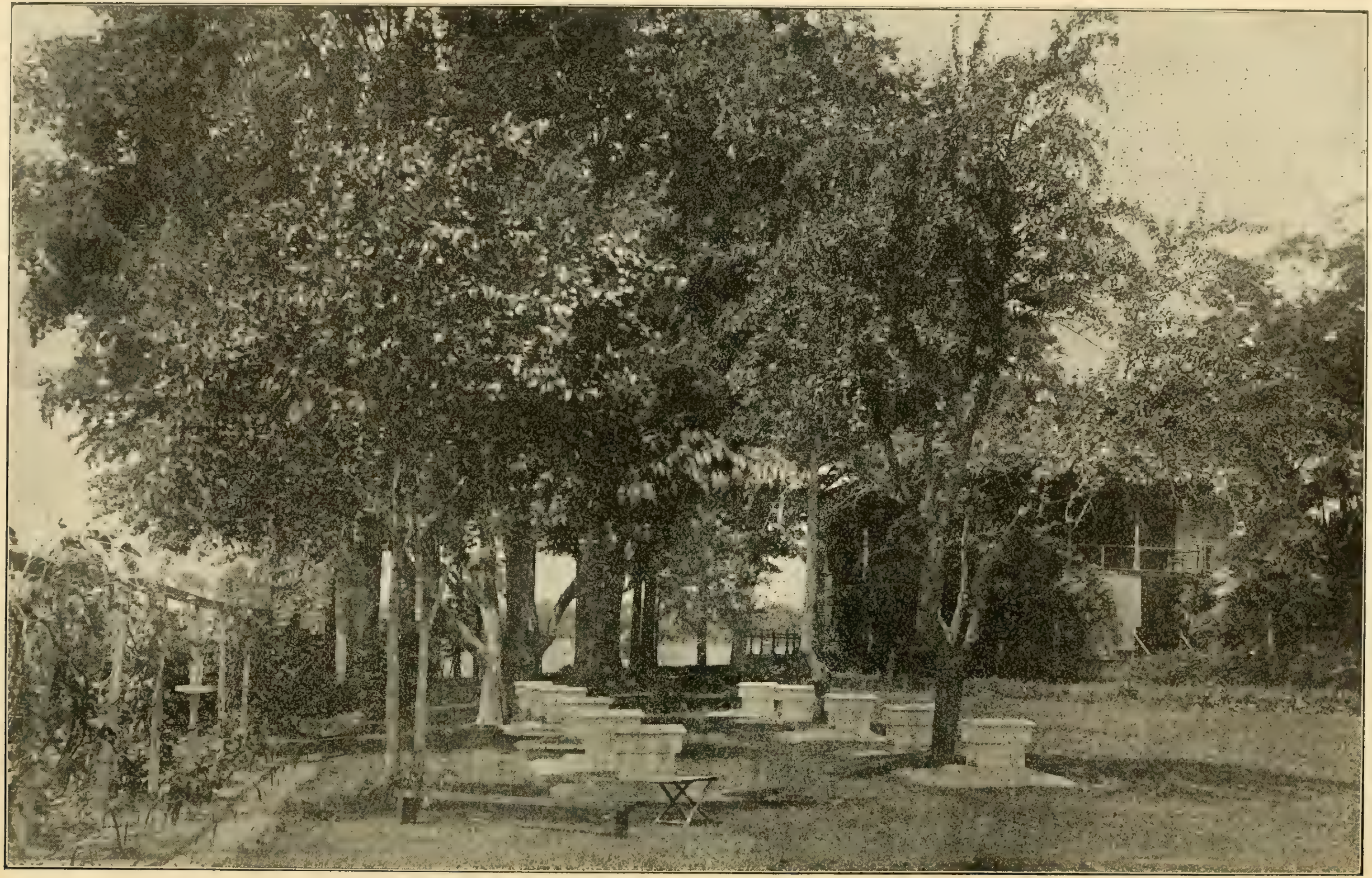
WIDE AND DEEP ENTRANCES.

How Honey-laden Bees Alight at the Entrances of the Hives; Pettit's Reply to Doolittle.

BY S. T. PETTIT.

Mr. Root:—Will you kindly allow me to make a short reply to Mr. Doolittle's criticisms of my method of taking comb honey?

First of all, in order to make a valid criticism it is necessary that the critic should possess accurate knowledge, and be free from prejudice. In that little imaginary talk with the bees of which he has told us, he did not seem to *know* that his sprawling posture right at the very door of their peaceful dwelling would frighten and confuse the workers as they were coming home with their loads, and cause them to make a great effort to fly clear inside the hive, and to act differently from what they do under normal conditions.



"BEE-KEEPING FOR PLEASURE." SEE EDITORIALS.

Mr. Doolittle seems to think he was having a real nice confidential talk with the bees; but they did not so understand it, and their inferred replies to his imaginary questions were not answers to them at all, and proved nothing, only that they were badly frightened, and who can wonder?

Both Dr. Miller and Mr. Root have expressed themselves as agreeing with Mr. Doolittle that loaded bees on returning from the fields swoop through the entrance and catch on to the bees or bottom-bars. Now, while a few bees do so, we all should know that, as a rule, in actual working practice many of them drop outside the entrance, and a good many quite a distance away.

Well, gentlemen, a suitable time will soon be upon us again, and I hope you will make further observations on this line, and report. The great mass of bee-keepers everywhere know without further observations.

Here is what Mr. A. I. Root says touching the subject, on p. 8 of the A B C of Bee Culture, last edition:

"Several years ago we had a fine colony suspended from a spring balance. It was in the height of the clover bloom, and the hive gained in weight during the day an even 10 lbs. As the hive was raised two inches from the ground to suspend it, the bees at about 9 o'clock had fallen on the ground in quite a little cluster, where they paused to take breath until they could again take wing to get into the hive. At this time the spring balance showed a gain of an ounce every five minutes. To help them, a cloth was tacked from their old alighting-board to the entrance of the hive. They then crawled in in a steady stream, and the dial of the balance at once showed a gain of an ounce in every four minutes."

Just now, right here, I wish to interject that, if the hive had been provided with a large entrance by the use of the Pettit wedges, many of those bees would have crawled up the sides of the hive, and comb-building and comb-filling would have gone on just about as rapidly at the outside sections as elsewhere in the super—that is, if the super were provided with good dividers to accommodate and hold a double bee-space full of bees out against the super side walls.

Years of careful observations in actual practice have proved the truth and value of my claims in that regard. I have no money in view in making these claims. Prejudice is a mighty factor in warping our minds. The first reference from Mr. Doolittle to my method of taking comb honey, that came to my notice, was made to poke a little fun at it. For some cause, I presume unknown to himself, he seems to have become prejudiced, and his criticisms seem to bear the same bent ever since.

It was Mr. A. I. Root, many years ago, who first called my attention to the importance of good and well-adjusted alighting-boards. I seldom look down a row of hives in the working season, and witness the cheering sight of thousands of loaded bees dropping down upon their alighting-board, and streaming so earnestly into the hives but Mr. Root's vivid description of the matter comes fresh to my mind.

Friend Ernest, when I first gave my method of taking comb honey, and a description of the divider and its uses, you said it was old, and that, if I would give you time, you would look it up. I know you are always busy, and you must have more time if you want it; but I beg to say that, if any one before me advocated and described a method of creating a double bee-space, where and for the purpose set forth by me, then he should have the credit for it. Now, please don't confound the divider with the perforated separator. These two implements are different in construction, and their uses are very different indeed.

Aylmer West, Ont., Can., Feb. 24.

[You have not given us the references, friend Pettit, to what you refer. So far as I am individually concerned I did not know that I had ever made the statement that *all* the incoming laden bees would swoop through the entrance, and grab hold of the cluster of bees. That many of them do do so, I know from long and careful observation at different times. I realize that an observer must get behind some bush, or just far enough in the background so as not to frighten or disturb the bees unduly, and probably Doolittle observed this precaution—at least he would be a poor bee-keeper if he didn't.

On one or two occasions Mr. Vernon Burt and I spent an hour or two watching the bees laden with honey go into the hives. These all had wide entrances, and a large number—I do not remember exactly the proportion of them—went clear through the entrance without alighting, and landed squarely on the cluster of bees hanging below the frames.

You speak as if the great masses of bee-keepers everywhere knew more about this than friend Doolittle and your humble servant. I have not a doubt of it so far as my knowledge is concerned, and it may be that I am wrong; but I have watched this thing for hours at a time, in our own, in Mr. Burt's, and in Dr. Miller's yard, each time getting back behind some natural barrier so the bees could not see us. On all of these occasions I am very sure that the incoming workers knew nothing of our immediate presence.

Now, there is one thing, friend Pettit, that perhaps you have not yet considered. When bees are working on basswood two-thirds of them—yes, three-fourths—will drop in the grass near the entrance; but when they are working on clover they are not so heavily laden when they come in, and hence are able to steer their flight a little more accurately.

I well remember the experiment made by A. I. R. with the hive on the scales, and I myself watched them with him many and many a time as the bees came in. But if you refer to the statement you will see that the bees at this time were working on basswood, and consequently would drop down on the entrances as I have explained.

With regard to your system of producing comb honey, we have had a large number of favorable reports; and so far as I am individually concerned I am convinced that your statements regarding the workings of this are abundantly borne out by the facts. So favorable were the reports that we finally incorporated the system in our hives. If any one is interested in the system, and desires to try it, all he will have to do is to call for any combination that has the letter C in it; for instance, CE64P | 8 calls for a Pettit bottom-board with a set of fences (dividers, as Mr. Pettit calls his), on the outside of each outside row of sections. Indeed, all fence supers made by The A. I. Root Co. (and probably by the other manufacturers) have this feature, with the exception of the Danzenbaker M super. By selecting any hive or any super, and putting with it the bottom-board designated C, one will get the Pettit system pure and simple. The only difference between our dividers and those of Mr. Pettit is that ours use horizontal oblong openings instead of round holes; but practically the results are the same.

But say, Mr. Pettit, I did not mean to give you the impression that I considered your system old, and would soon point out some one who antedated you. The footnote to which you refer is doubtless that which is given on page 288, April 15, 1897. What I meant was that a cleated separator with holes was old; and in proof I referred to our English cousins. But your manner of using the same is, so far as I know, new; at least, in the three years that have gone by no one has pretended to lay claim to it.

The Pettit system was first described, I believe, in our issue for Jan. 15, 1897, page 52, and those who are especially interested can refer to this back number.—Ed.]

POLICY IN BOOK-MAKING.

Especially the Making of Bee-books.

BY PROF. A. J. COOK.

Dear Mr. Editor: — I wish to present a matter which I think is quite important in the policy which you and I should adopt as makers of books. I refer to the matter of giving a mention, and also the character of the books and journals which treat of the subject which the book considers. I do this because a good friend of mine, and a person for whose judgment I have the greatest respect, urges me to leave out of all succeeding editions of my work the notices which I give in the early pages of the work of the several journals and books which treat of bee-keeping. I do not agree with my friend, though from your practice I take it you do. My friend urges that it is not for my interest; that the other authors do not do this, and so it handicaps me. I advertise them and get no return. He also adds what seems to me a more important reason, that books grow old and cease to be published, while the journals even die outright, and so the information is often unreliable.

I wish now to give my own opinion, and ask you in an editorial to expose all its weak points. In the first place, it seems to me that the wisest author is he who keeps his readers in mind and not his own interests. True, this may not pile up the ducats so rapidly; but I am quite sure that you agree with me in believing that a grander thing was never said than those beautiful words of the Master, "Man shall not live by bread alone." There is nothing that I am more interested in, in studying any treatise, than to know fully of the literature of the subject; and if there are good notices of the books, so that we may know something of the contents, I value this still more. That I am not alone in this appears from the fact that all of our leading treatises in science in these later better days give a full bibliography. I hardly know of a good book on any scientific subject published in the last few years that does not add what to me seems one of the best parts of any treatise.

I am sure that you will agree with me that, if this is a right policy, we have no business, nay, not for a moment, to consider what may be to *our* financial advantage.

I have always felt that in bee-keeping we were writing for more than ordinarily intelligent people. I think our bee-people are readers, and are very generally students of no mean rank. If I am right in this opinion, then the readers will rarely be satisfied with any one book, and will wish to purchase other books intelligently. Surely you and I with all our study and experience can give a review of the books which will aid them greatly in just this direction. If I am right in my view of this matter I feel that I can not afford to omit this part of my book, even though such a course might contribute never so largely to my pocketbook. You have given to the apiarian world a splendid treatise. You must have thought this matter all over. I know you too well to think for an instant that any selfish argument has had any weight with you. Therefore it is that I feel greatly interested in knowing your views regarding what seems to me a very important policy. To put the case in a nut-shell, I would say we write for the best interests of our readers. The best of our readers are most interested in the literature of the subject. Therefore we must include a full bibliography.

[The mention of bee-books and bee-journals was left out of the last edition of our A B C book for several reasons. First, we desired to make use of the space which it occupied, as the subject-matter of the main part of the book was crowding upon the smaller departments in the latter portion of it. Second, as your friend very correctly says, books stand on the shelves for years; and whenever one turns to the book notices, unless the volume in hand is just fresh from the press the mention of the various treatises and journals relating to the subject is apt to be very much out of date, not to say stale. I was reminded of that quite forcibly in reading some of the notices in our book regarding certain other books and periodicals. Some journals had passed from the scene of action. The editorial management of others had been changed as well as their general character. Some books had been revised, and others were out of print. All this led me to feel that the same space might better be taken up with something else. Of course, it might be said that the subject-matter as a whole will get out of date too. That is very true; but if one follows implicitly the methods recommended in any old bee-book, he will meet with a reasonable amount of success. The only difference is, he will not be in position to compete as well with his brother bee-keeper who has been reading a later volume, giving later methods and describing later devices having for their object a greater product with the minimum of labor in the production of the same.

Third, I have attempted to write book notices, but found that I was liable to give offense to some, especially the younger ones aspiring for journalistic honors, because I did not give their productions as extended, careful, and flattering notices as I had given some of those longer in the field, with larger experience. In the case of new bee-journals, one in justice to his readers is compelled to ignore them altogether or else give them very meager mention.

In the fourth place, *current literature* is so much better for the mention of books and periodicals that it has rather seemed to me that that matter should be delegated almost entirely to that class of reading rather than to the kind that is put away on shelves, and possibly does service for ten or twenty years.

I am heart and soul with you in believing that the financial argument should have nothing to do with what should appear in our books. The truth should be told, no matter where it cuts.—Ed.]

PLAIN AND BEEWAY SECTIONS.

Comparative Filling in the Same Super.

BY JOS. HANEY.

I notice there is still some harping about those fence separators. Those who think they are not right, let them try them themselves, giving both kinds an equal show. That's what tells. I herewith send you a photo of some, all produced from one hive. The supers I use are in halves, each holding 16 sections each, or 32 to cover brood-nest once. One division of one of these supers was filled with plain sections and fences, and the other division, or half, with beeway sections and plain separators. As both sets were on one hive they were each given an equal chance. Now for results:

The 16 sections on the left in the photo I send you are the plain sections, and speak for themselves—even the end boxes were filled. The 16 on the right are the beeway sections. This is all buckwheat honey. The swarm was a very weak one—the boxes being put on the 10th of June for light honey; but they were so weak they did not start in sections till dark honey came. The super was not molested till after dark honey was over, so all had an equal chance. Sheets of foundation were of all sizes in both divisions or halves of the super, and were put in on purpose to see how they would use it. The experiment satisfied me, and I thought it might some others experimenting.

I should like to know about rendering beeswax by steam. I have the steam, and have rendered with it for five years, but do not feel satisfied: that is, I can not get it out clean enough.

Hayt Corners, N. Y.

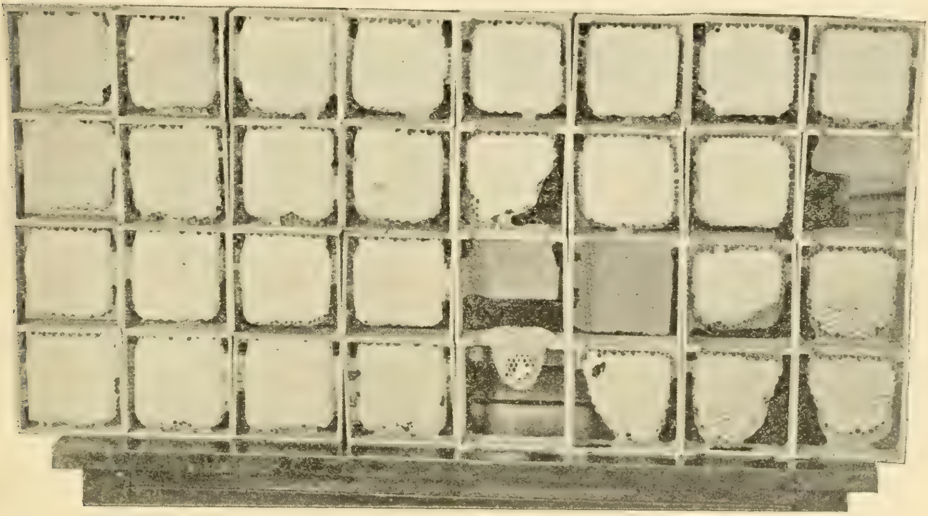
[This experience of yours in the case of the one super seems to indicate very strongly that plain sections are not only better filled, but entered more quickly than those of the beeway kind; but, as you know, one swallow does not make a summer. I have noticed myself that bees will sometimes commence on one side of the super for no apparent reason, notwithstanding there were the same kind of sections and the same kind of foundation used all through the super. I can give no explanation except that they just *happened* to do so. In this connection it might be well to state that Dr. Miller has had experience quite as positive, but just the reverse—that is to say, he divided several supers, putting beeway and plain separators on one side and plain sections and fences on the other. I do not remember whether in all of his supers so prepared the plain sections suffered by comparison, but we have had a good many other cases just like this, where the plain sections were better filled; but up till this time I have been able to explain them all in this way: A weak colony would enter beeway sections with plain separators more quickly than it would those of the other kind because the first named are like so many little rooms; the separators being solid to a certain extent, shut off the air currents; but *weak* colonies are not in a normal condition for honey. When colonies are strong, then the plain sections will be entered first, and be filled better. But in your case you say the colony was weak. I give it up.

But in all this we must understand that the only difference between beeway sections and plain sections is in the matter of separators; and, again, the question hinges, shall the separator be solid, or composed of slats? The very fact that a great many are ordering slatted separators for beeway sections because they consider them an advantage after having given a preliminary trial, goes to show that separators with openings, under normal conditions, are probably better than those that are solid.

I said that the only difference between the plain section and beeway is in the separator. That needs qualification slightly. In the case of the plain sections, the beeway (as provided by the fence) reaches clear across the width of the section, a quarter of an inch *down* from top, and the same distance *up* from the bottom, thus making them partly open-corner. There is quite an amount of evidence to show that even beeway sections of this kind will be better filled at the corners because the bees can pass from one section to another without going up and around, as in the case of the old-style sections. If my supers were all adapted for beeway sections, and I felt satisfied that they were the right kind, I would certainly adopt what we call the open-corner sections—that is, sections that are open clear across the top and bottom, and half way up and down the perpendicular sides. With such a section and solid separators and plain sections, with solid separators *cleated*, to provide for the bee-ways, the conditions would be identical. But it is needless to say that the plain sections in this case, when placed on the market, would look better because there would be no beeway projections, which almost invariably give the comb honey a lean, sunken appearance.

About rendering by steam, we find no trouble along that line. We run a jet down into our tank, and let it snap for half an hour. But there is perhaps one thing that we do that Mr. H. does not, and therein lies his trouble. I would advise him to place about two pailfuls of water into a barrel holding about 31 gallons. If it is of the 50-gallon size, then use three pailfuls. Into the water pour from one-half to one pound of commercial sulphuric acid, such as can be bought at any drugstore—that is, providing the wax is very dark. If the wax is of a leather color, and it is desired to bring it to a lemon color, put in only about 4 ounces of the acid. Turn a jet of steam down into the water, using a common half-inch steam-pipe. Let it snap until the water is hot, and then add the chunks of wax gradually until the barrel is nearly full of melted wax and water. Allow it to snap for a few minutes, seeing that the water, acid, and wax are thoroughly mixed. Remove the steam-pipe, put the lid on the barrel, and cover the whole with old blankets, old carpets, or any old thing that will help to confine the heat in the barrel, keeping the wax in a liquid condition as long as possible. At the end of three or four hours, or longer if possible, dip off the wax from the top, a dipperful at a time, being careful not to stir it up. When the wax is dipped down to within six inches of the probable water-line, dip no more, but allow the remnant to cool in the barrel, after which remove the cake, scrape off the bottom, and use it at the next rendering.

I omitted to state that the wax, as fast as dipped off, should be placed in tin pans or pails that have been greased. After the wax cools, turn the pails bottom up, and, presto! you will find nice yellow cakes of wax. If, perchance, they are too leather-colored yet, next time use a little more acid; but do not use more than is necessary.



PLAIN AND BEEWAY SECTIONS FROM THE SAME SUPER (PLAIN SECTIONS ON THE LEFT.)]

In cleaning tin utensils, never scrape, for that will remove the tin, and the iron, or steel, rather, will rust. To get the wax off, turn a jet of hot steam right against the inside of the pails or pans used. This will disengage every particle of wax.

If one does not have steam he can use an ordinary iron kettle, being careful to observe about the quantity of acid and water. The vinegar, for such it really is, will be so weak that it will not attack the iron enough to cause any serious trouble.—ED.]

THE HAKES-HEDDON ADULTERATION MATTER.

A Report from the National Bee-keepers' Association.

Mr. Editor:—I inclose a copy of the report of Dr. A. B. Mason, Secretary of the National Bee-keepers' Association, who went to Jackson, Mich., at my request, to attend the trial of M. G. Hakes, a groceryman, who was arrested for selling adulterated honey. The report will explain itself, and you are at liberty to use it in the columns of your journal if you so desire.

As the National Association has undertaken the work of aiding prosecutions against the sale of adulterated honey, it becomes my duty to lay before our members, many of whom are readers of your journal, the facts gleaned in the performance of that duty, no matter how unpleasant the facts are to me personally.

Yours truly, EUGENE SECOR.

Forest City, Iowa, May 3.

Hon. Eugene Secor, General Manager of the National Bee-keepers' Association,

Dear Sir:—In complying with your request for a report of the proceedings in the case of Mr. M. G. Hakes, of Jackson, Mich., who was arrested, and tried in the Circuit Court of Jackson County for the sale of adulterated honey, I have this to report:

On the 22th of January, last, I received a request from you to attend the trial of Mr. Hakes, as the representative of our Association, and do what I could to help in the prosecution of the case that was to be tried on the 23d. In compliance with your request I attended the trial. I learned that, last fall, Mr. W. D. Soper, a bee-keeper living near Jackson, Mich., and who also deals in honey, discovered that what he thought was adulterated extracted honey was being placed upon the market at Jackson. He bought a sample of the honey, and sent it to the Michigan State Dairy and Food Commissioner. On September 29, 1899, Mr. Carl Frankie, a State Food Inspector, of Monroe, on his regular inspection-tour at Jackson, called at Mr. Hakes' place of business and purchased of him two one-pint cans of what he was selling for honey, one of them being labeled, and ready for the market, and the other was taken from the original package, a five-gallon can. Mr. Frankie explained to Mr. Hakes that it was his duty "to keep tab on all the foods that were exposed for sale, and also on honeys," and asked him to sell him a package of honey, which he did willingly. The cans were labeled "M. G. Hakes, Pure Honey, Jackson, Mich."

At the trial of Mr. Hakes in the Circuit Court for the county, in Jackson, Mr. Frankie stated, in substance, while on the witness-stand, that when food samples were procured for inspection, certain records were made, and in this case the record of the Inspector showed that, in the sale of this adulterated honey, Martin G. Hakes acted as agent, and that the manufacturer was James Heddon, of Dowagiac, and the package was marked "Pure Extracted Honey," and was purchased of Mr. Heddon about Aug. 21, 1899.

Another witness, the Food and Sanitary Inspector of Jackson, testified that the original package from which the sample of honey in question was taken had not been opened till Mr. Frankie opened it, and that Mr. Hakes acted as agent "for a Mr. Heddon, of Dowagiac."

Mr. Frankie, on cross examination, testified that other samples from Mr. Heddon's place, than the one under consideration had been sent to the State Analyst, and all were adulterated to about the same extent as this, except one of comb honey.

Mr. R. E. Doolittle, State Chemist, of Lansing, Mich., testified to having examined the sample under consideration, and found it to be adulterated honey. The per cent of adulteration I do not now remember, but it was large; I believe about 57 per cent of glucose.

Mr. Doolittle, in reply to a question by the attorney for Mr. Hakes, said that he had always had the impression that Mr. Hakes was only the agent for Mr. Heddon, and that Mr. Heddon had done the mixing.

In reply to the question, "Was this honey represented to you as pure by Mr. Heddon?" Mr. Hakes testified that, a few days before he was arrested (he was arrested Oct. 11, 1899), he was told that he was selling adulterated honey, and he said that he wrote Mr. Heddon a letter, telling him that one man, a stranger, had offered to bet him $25.00 that the honey was not pure, and Mr. Hakes told him that he "would put up the money with him any minute; but before I would do it I sat down and wrote a letter to Mr. Heddon, and said to Mr. Heddon, 'I want to know now, Mr. Heddon, if I am selling pure honey, or if I am not.' He wrote me back, stating that 'if my honey goes from me to you, and from you directly to your customers, just as you get it from me, rely upon it, it is strictly pure; but,' said he, 'I would not bet;' that is the first thing that opened my eyes."

At the close of Mr. Hakes' testimony the court instructed the jury, and they returned a verdict of guilty, without leaving their seats.

I felt pretty well satisfied that Mr. Hakes supposed he was selling pure honey, and I believed that the members of our Association cared more for the conviction of those guilty of selling adulterated honey, and stopping the practice, than to punish a party who seemed so innocent of fraud as Mr. Hakes; and, being under that impression, I asked the court to impose the lightest penalty the law would allow, which the court did, fining him $25.00, which I believe was paid by some of Mr. Hakes' friends.

As an officer of an organization that has for one of its objects the prevention of the adulteration of honey I was very much interested in this case; and as the evidence seemed to indicate pretty clearly that Mr. Heddon was guilty of selling adulterated honey, and that he did the adulterating himself, I have taken some pains to learn if he really was engaged in such business; and the first thing to hand is Bulletin No. 50, of the Michigan Dairy and Food Department, and under the head "Honey" I find this:

"No. A 298. Sample of honey (brand 'Pure Extracted Honey') taken from original package at Jackson. Sold (1899) by M. G. Hakes, Agent, Jackson. Producer, James Heddon, Dowagiac." Then follows a statement of the analysis of the sample, and following this are the words, "Glucose flavored with honey."

On the same page of the Bulletin on which the above appears are three other similar reports in which each sample examined was marked "Pure Extracted Honey. Producer, James Heddon, Dowagiac," and each exhibit is marked "Glucose flavored with honey."

On the next page of the Bulletin are two more reports, similar to the above, in which James Heddon appears as the "producer" and Mr. Hakes as "agent," and I believe it is claimed there was about the same amount of adulteration in each sample as in the one for the sale of which Mr. Hakes was convicted—about 57 per cent.

In an article which appeared in the *Farm Journal*, of Philadelphia, for January, 1900, in an editorial, under the heading "Food Adulterations" the editor says, "Some important facts on this subject are found in the recently issued Bulletin No. 50 of the Dairy and Food Department of the State of Michigan. . . . Eight samples of honey, variously marked as 'Pure Extracted,' 'York State,' etc., were found to be only glucose flavored with honey. Six of these samples claimed to be produced by a person having a name well known and honored among bee-keepers," etc. The other two samples are marked "Producer, Steele-Wedels Co., Chicago, Ill.

On Feb. 8, 1900, Mr. Wm. A. Selser, chemist, of Philadelphia, makes this report: "This is to certify that I have analyzed the sample of honey sent, marked No. 1, bought of James Heddon by L. H. Warren, Jennings, Mo., and found the same to be 52 per cent to 54 per cent adulterations of glucose," and on the same date Mr. Selser certifies that another sample sent him and "bought of James Heddon by L. H. Warren, Jennings, Mo.," was found to contain "58 per cent to 60 per cent of glucose."

Wishing to know what Mr. Warren had to say, I wrote him, March 12, ult., and in his reply, dated March 17, 1900, he says, "I bought seventy 60-lb. cans of extracted honey from James Heddon, which I received as follows," and gives the number of cans received at different times, 5 cans in September, 1899; 15 cans at each of two shipments in November, and 35 cans by two shipments in December.

Mr. Warren says, "It may seem strange to you that I bought so much, and will explain. The first lot of 5 cans which I got as a sort of sample was adulterated very little; but every lot got worse; a small sample of this lot which I have on hand now has granulated solid, but streaked; another lot only looks cloudy. . The last lot does not granulate any more than any other glucose. . . Analysis of this shows 58 per cent to 60 per cent glucose. . . Only about 200 lbs. of the last lot was turned back on me. . . I had no suspicion of this honey being adulterated until I had disposed of nearly all of it. . . After I found out that the honey was not pure I wrote to Heddon, asking for a written guarantee of its purity. . . . He wrote back, 'I take pleasure in certifying that I shipped you pure extracted honey.'"

Mr. Warren is a member of the firm of Warren & Mange, dealers in staple and fancy groceries, flour, feed, and general merchandise.

In a letter written by Mr. Heddon on Feb. 15, 1900, he says that Mr. Hakes "never sold honey for me. *He bought of me*, paying cash in advance. . . I shipped him *pure* honey, and I rather *think* that he sold it as I shipped it to him. Of course, I do not *know;* and, so far as my *personal* interest is concerned, *I do not care.* . . I think I have had ample evidence that chemists can not tell adulterated from pure honey. .

It appears they *guess* at it. . . In view of Mr. Hakes' testimony, as reported from his customers, if the honey I sent him was adulterated, it would probably be beneficial to both producers and consumers if all honey was adulterated in the same way."

Several years ago, perhaps twelve or thirteen, some well-known bee-keepers felt satisfied that Mr. Heddon was engaged in adulterating honey, and selling it to his customers, and since that time several have complained that the honey purchased of him as pure was adulterated before it reached them, and have stated that the packages they received showed no signs of having been changed or tampered with in any way from the time they were shipped till received by them.

A little over six years ago there was an impression that Mr. Heddon was engaged in adulterating honey; and a chemical analysis of some honey, claimed to have been bought of him, showed that it was adulterated with at least 50 per cent of glucose, as was shown in GLEANINGS IN BEE CULTURE at that time.

It is possible that this report is too long, and may contain matter that may not have any bearing on or connection with it; but I thought it might be well, in every possible way, to expose the adulterators, whoever they may be, and so put producers, dealers in, and consumers of honey on their guard against the adulterators; and if but a small portion of the statements and affidavits before me are true, one of our own number has gone astray, and, if so, should be exposed. Very truly yours, A. B. MASON,

Sec. of the National Bee-keepers' Association.

[In publishing the foregoing we have assumed a very unpleasant and disagreeable duty, to say the least.—ED.]

GREASY SECTIONS.

The Queen the Cause; A few Facts in Support of the Proposition.

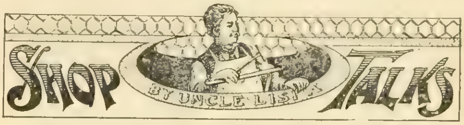
BY J. A. GOLDEN.

Dr. D. A McLean, in the March 1st issue of GLEANINGS, has given us quite an amount of testimony in regard to the greasy appearance of cappings of section honey; also W. M. Whitney; and the latter seems to be very anxious to buy all such queens from apiarists who hold that the queen is responsible. Dr. D. A. says he wishes to lend his assistance to "sit on" Dr. Miller and other writers who advise the killing of queens that are held responsible for producing the greasy appearance of cappings of comb honey. Now, Dr. McLean, I make a specialty of producing section comb honey, and have always held the queen responsible for the greasy appearance spoken of, and I am still of the same opinion, unless you can unravel the following:

I will give only one instance, and upon this you can see conclusive evidence, I think, if you will turn to GLEANINGS, 1898, page 690. Now, from the reading of your observations it seems that you base your conclusions upon the condition of the weather and flow of nectar. This being so, why was it that all my colonies during 1897 and '98 produced just as beautiful white capped honey as is shown in view No. 1 and 2, page 690? and one colony producing the greasy-looking capped honey, both 1897 and '98, as shown in 3 in same view?

In presenting the view of section honey shown, it was a test case of three different styles of separators; and it so happened that No. 3 was produced by the queen's colony that produced nothing but greasy, smeared, capped honey, both brood as well as section honey; and in presenting the view I then asked for the opinions of the brethren as to the cause of No. 3 showing so dark. Of course, any honey-producer could have told the cause; but, coming up as it did, all would naturally think the separator had something to do in the matter; but if you turn to page 844 you will see my answer as previously promised, and the queen lost her ruling, notwithstanding she was the most valuable honey-gathering queen I ever owned; and if Mr. Whitney is a producer of extracted honey he is quite wise indeed in purchasing such queens.

Reinersville, O., Mar. 9.



I didn't see any thing of the deacon again for more than a week, when one day, just as I had finished putting starters in my second thousand of sections, he came in.

"Say, Lisha," said he, "have you got any grapes yet? Old Lydia Morton has been ailing all winter, and I thought I would see if I could get some and take over to her. She is very fond of them."

I went and brought out a nice basket of Vergennes that looked fresh, and had that rich deep wine color that only choice grapes can show.

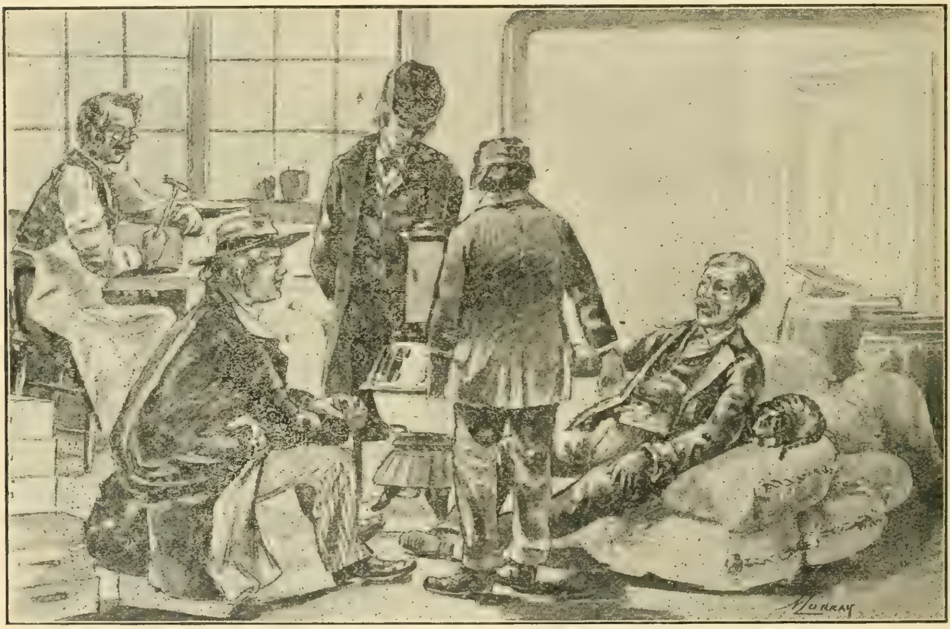
"I declare!" said he; "those look good for February. How in the world do you manage to keep them so fresh?"

"Not much of a trick," I replied. "In the first place, you want a good keeping variety. Some varieties won't keep much better than early apples. I have found the Vergennes one of the best. The Lindley is good; so is the Merrimac, a black grape, and some others. When they are fully ripe, pick them carefully so as not to bruise them, and put in shallow boxes with slatted bottoms. I use old supers for this. Leave in a cool dry place until the stems shrivel, and then pile one on top of another, six or eight deep, and cover the top one with a board or paper, and keep in a cool place—the cooler the better if it doesn't freeze. In this way I keep them most of the winter, and sometimes I have had them in May."

"That is worth knowing," said the deacon; and after he had hemmed a little he went on. "I have been thinking, since I was in the other day, about that idea of having dominion over every thing. I am not sure but there is something in it. I thought how you managed your bees. You clip the queens' wings, and change them about and keep them from running away; but I guess it is a good deal against their will sometimes. And then I thought of old Bill Sykes' son Silas that ran away. You knew him. Now, Bill might have broken one of his boy's legs, or maimed him some way as you do your queen bees, or shut him up, but it would have been a pretty barbarous way of retaining his dominion over him till he was twenty-one. How much better it would have been to bring him up to work, and be dutiful, and then he would have stayed at home because he loved to. And so I can see it would be better if you could make the bees want to stay at home and work, and not swarm; but it's nature—a natural instinct to swarm. Can you change or eradicate an instinct, *a primary instinct*, as Mr. Culley says, by breeding or domestication?"

"Heavens to Betsey! Talking bees yet," exclaimed my friend Simpson. "Why, you know enough about bees to make a book. But I came over to see if I could borrow a dozen ten-penny nails—some of them 'ere round ones."

I supplied his modest request, and proceeded. "I don't see, deacon, why instinct can't be bred out as well as bred in. Let us see. There is the silkworm. I am informed that they have been bred so long on shelves or paper, and fed with leaves picked by hand, that, if you place them on the leaves on the trees, instead of beginning at the edge of the leaves they are liable to begin and gnaw off the footstalk, and drop to the ground and perish. And then many of them lay their eggs without sticking them to the surface of any thing. They have lost some of their instincts. Again, there is the migratory instinct of birds You know how most of them in a state of nature would perish if they didn't have it. It is one of the most important; and yet see how soon they lose it when domesticated, as, for instance, ducks and geese. And then there are some wild birds that seem to have lost the incubating instinct, like the English cuckoo or the American starling. They just drop their eggs into some other bird's nest, and shirk the irksome duty of incubating and bringing up a family, and so on. But I want to call your attention to another instinct. Audubon, that great naturalist, or ornithologist, perhaps, I ought to call him, tells how birds of the same species build their nests very differently in the North from what they do in the South, owing to the difference in climate. Then there is the instinct of fear I was speaking of the other day. Every thing, almost, has it. You know Noah and his sons were told in that same book of Genesis that the fear of them and the dread of them (and that meant his descendants as well) should be on the beasts of the field and the fowls of the air and the fish of the sea, and all the creeping things on the earth (and that meant every thing). And I could not help but notice last summer, when I went a fishing, how the fish would scatter as soon as they saw me, like a flock of wild geese. You remember how Livingstone tells us that even the lions in Africa were afraid of a man, and a lion is the king of beasts, you know. This fear is a marvelous instinct, I tell you. Who told those little fish or the birds or the deer that there was danger when a man comes near them? Probably not one of those little fish had ever seen a man before."



"FASSET MAKES ONE ON THE 'SQUIRE."

"That is mighty curious and pretty interesting talking," said Fasset, who was listening from behind the stove.

"But it is as true as Scripture," said the deacon. "It is a divinely implanted instinct, and is over every thing, over all his works."

"And yet," said I, "when I opened my barn-door the other morning our tabby cat bounded to my shoulder, and rubbed her head against my neck as much as to say, 'Good morning—how d'ye do? Pretty well, how are you?' No fear here, I said to myself. May be cats are an exception to the rule; but I soon discovered that my horse was just as glad to see me, and my cow was only too pleased to have me come to her side with a milk-pail—not one bit afraid, any of them. And then I thought, how, when man has gained dominion over animals by kindness, the fear is taken away. Fear was necessary for their preservation when in a state of nature, or wild, but not under domestication. You see, deacon, as I said, we must compare Scripture with Scripture if we would get its full meaning."

"But what has all that to do with a breed of non-swarming bees, I should like to know?" inquired Fasset, from his seat on the nail-keg.

I noticed the deacon looked thoughtful, and I went on:

"Just this: In a state of nature the swarming instinct is as necessary for the increase and preservation of bees as the instinct of fear is to animals, or the migratory instinct in birds for their preservation, while with the skillful bee-keeper it is *worse* than useless."

"But bees have been under domestication for thousands of years, and this instinct for swarming appears as strong as ever. At what date of the popular era before it is likely to disappear?" queried Fasset, with a twinkle in his eye.

"Yes, that is true after a fashion," I replied; "but their domestication has been little more than giving them hives to live in, and then robbing them of their hard-earned stores, and then feeding them, perhaps, when there is danger of their starving. I believe the real domestication and cultivation or improvement of *Apis mellifica* has only just begun."

"I am inclined to think you are right," said the deacon hopefully.

I felt encouraged, and continued:

"Already I see signs of most important changes in the character of some of our best strains of bees. The nature of bees seems to be a bundle of instincts. They have the brood-rearing instinct, the honey and pollen gathering instinct, the swarming instinct, the comb-building instinct, and the instinct for defending their brood and stores, and the instinct for gathering propolis and daubing it over the insides of their hives, to say nothing of others. The best of these we want to improve and develop, while others we must get rid of or modify so as to be harmless. Now, there is the propolis instinct. We all know how that, in a state of nature, or for wild bees that live in hollow trees or cavities in rocks, it is a very desirable instinct to fill up all the cracks and crevices to keep out enemies; but with improved and carefully constructed hives it is no longer necessary. We know how one colony sitting beside another will be bringing in propolis and spoiling what surplus they have already gathered, while the other will keep on storing honey without gathering any propolis to speak of. Now, we must get rid of it by breeding from the queens of those hives that store the least of it until bees lose the disposition or instinct, so to speak, to gather it."

"A capital idea," said Fasset, from his seat on the nail keg.

"Yes," I continued, "it is a nuisance, and no more necessary than horns on sheep or cattle. Horns were desirable and necessary to defend themselves from wild animals in a state of nature; but when man has subdued all the carnivorous animals horns are not needed, and he is getting rid of them. The sheep are already mostly hornless, and the cattle-men, or at least the dairymen, are fast following suit, and dehorning their cows."

"That's so," said Esquire Fullam. "Over at our meeting of the Dairymen's Association at Jonesboro we voted almost unanimously in favor of dehorning. You see, our winters here are pretty cold; and when we turn our cows out of the stables to drink, unless they are dehorned they are jabbing or raking one another with their horns; and, besides, dehorning makes them gentle. I tell you, with our dairy cattle dehorned, and the sweet feed we have, we can beat the world making butter. Our dairymen are going to make an exhibit at the World's Fair in Paris next summer. I don't know whether the committee will place it in the same room with inferior grades of butter or not; but they are going to have a large canvas background with some mountains painted on it." Here he coughed for a minute or two, and then gasped an apology. "I tell you, our air is so exhilarating it makes me cough."

I noticed a twinkle in Fasset's eye. He is not naturally quite so enthusiastic as the 'squire. I knew something was coming.

"Say, 'squire," said he, "you think more of our State than a member of Congress who lived down South in antebellum days did."

"How is that?" inquired the 'squire.

"Oh!" said Fasset; "when he saw the strong anti-slavery sentiment up here in our State he introduced a bill directing the President to have a ditch dug around it and the whole thing floated out into the ocean."

The deacon laughed heartily. I was glad, for the deacon, as I told you, is a little quick-tempered. I have heard that, within six months after he was made deacon, Elder Grimshaw was going by his place one cold afternoon in January, and he heard him training his cattle around his barnyard in great shape, with his pitchfork, and using language much more emphatic than pious. The elder stopped his horse, and, standing up in his sleigh, just inquired, "Is Deacon Strong at home?"

"No, he isn't," said the deacon; and the elder drove on with a heavy heart. It was just Zebadiah Strong as he used to be; but a fortnight later, when the elder called, the deacon was as humble, penitent, and loving as Peter at the sea of Galilee after he had denied his Lord.

Do not forget to write to your Congressmen, asking them to support the Brosius pure-food bill. The time to do it is RIGHT NOW. If you wait till to-morrow you will not do it.

CONVERSATIONS WITH DOOLITTLE.

HOW TO MANAGE SWARMS HAVING QUEENS WITH THEIR WINGS CLIPPED.

"Good morning, Mr. Smith. What can I do for you this morning?"

"I see by GLEANINGS for March 1 that you advise clipping the wings of queens where natural swarming is practiced. A friend of mine tells me that clipped queens cause much trouble in swarming, and I came over to have a talk with you on the matter, so I may learn your methods of managing swarms that have clipped queens."

"What your friend tells you seems strange to me, for I would rather care for three swarms whose queens have their wings clipped than for one where the queen is not clipped. Your friend can not understand the best plans of managing such swarms, it seems to me, or he would not talk about trouble with them."

"Very likely he does not. Will you tell me something about your ways of working with such swarms?"

"Certainly. The first thing necessary is two or three light strong poles. I use three—one 10 feet long, another 14 feet, and the third 18 feet. This is so I can secure a swarm from any tree in or about the apiary, and hold it for any length I may desire before hiving, or hive it before all of the bees get clustered, just as I desire, for there is nothing so nice as to know that you are master of any situation that may arise in the apiary."

"That sounds very nice; but how do those poles help you to master the situation during the swarming season where the queens have their wings clipped?"

"Give me time and I will tell you. In the small end of each I bore a hole of suitable size to receive the iron or handle end of one of Manum's swarm-catchers, keeping both the catcher and the poles in a handy place in the apiary."

"Yes but I have not got a Manum catcher. What shall I do in such a case?"

"I do not think I can give you better advice than to tell you to send to some of the Root Company's supply houses and get one, for this catcher is the most convenient thing I know of to have about the apiary in swarming time, no matter whether you have the queen's wings clipped or not."

"Do you put the clipped queen in the catcher?"

"Yes and no. Besides the catcher we want a small round wire-cloth cage, called a queen-cage, the same being about an inch in diameter, and four or five inches long, with a permanent stopper in one end and a movable one in the other, having a piece of pliable wire attached to the cage near the end having the movable stopper."

"How is this used?"

"Seeing a swarm issuing I take this round cage and step to one side of the front of the hive, and stand five or six feet away, so I can take a view of the whole front of the hive, and several feet of the ground in front of the entrance, at a glance, when, if the queen is out, I almost instantly see her, and if not out I see her as soon as she issues. I used to get close to the entrance to look for her, and often looked a long time before I found her, owing to the short range of vision which contracted the breadth of field seen at one time."

"When you found her did you catch her and put her in the round cage?"

"When the queen was found I put the open end of the wire-cloth cage down so she could crawl into it, which she does immediately, as it is natural for a bee or queen, which can not fly, to crawl up any thing and every thing she comes in reach of. Having the queen in the cage I place my thumb over the open end and go to the front of the hive; and as soon as she turns in the cage to go toward the end having the permanent stopper in it I put the open end to the entrance of the hive, holding it there till twelve or fifteen bees run in as they are tumbling out of the entrance to go with the swarm, when the queen and bees are to be secured by putting in the stopper."

"What do you want those twelve or fifteen bees with the queen for?"

"They will set up a buzzing pretty soon, and help to call the swarm to where the queen is, for this cage of bees is to be secured to the inside of the swarm-catcher by means of the wire that was attached to it, and the iron to the catcher inserted in the hole in the end of one of the poles which was provided, when the catcher is held up among the thickest of the flying swarm."

"And will the swarm alight in it and on it?"

"Yes, quite generally they will, but sometimes they will begin to alight on some limb while we are caging the queen and getting the catcher ready, especially if we are a little slow."

"If they begin alighting on a limb, what then do you do?"

"As soon as I see that they have begun to alight I know there is little use in trying to get them to alight on the catcher by holding it up in the air, so I take the right length of pole that will make the catcher reach them, and as soon as a quart or so have settled on the limb I put the opened catcher under the cluster, jarring the limb at the same time by suddenly pushing up on the pole, which causes all of the clustered bees to fall into the catcher. With a downward motion the cover of the catcher is brought over some limb in such a way that it is closed, when I have the bees prisoners. The bees in the round cage with the queen now set up a humming noise, which causes those in the catcher to do the same, and this loud humming, or 'call,' as it is termed, attracts the flying bees which remain outside of the catcher, and soon we have the whole swarm in and on the catcher."

"And do you hold the pole and catcher all this time?"

"No. As soon as the bees begin to alight on the catcher the big end of the pole is set on the ground in such a way that the pole may lean against some limb of a tree, and it is left thus till I wish to care for the swarm. Mr. Manum provided legs for his pole so it could be set up anywhere in the apiary; but as there are plenty of trees in and about my bee-yard I like this way best, as the poles are not so inconvenient to handle without the legs. If not convenient to hive at once, the swarm can be left in and on the catcher all day, if desired, and no danger of their taking any hurt or running away to the woods."

"But suppose you wish to hive the swarm as soon as possible, is it necessary to wait for all to cluster on the catcher?"

"No. If the place of hiving is within four or five rods of the alighting-place, I wait for only about half of the bees to get clustered in and on the catcher, when I take it to the hive and start those I have to running in, when the whole swarm will come."

"Do you use this plan altogether?"

"No. As the season advances, so that the new swarm needs some help to give the best results in comb honey, I use what is known as the Heddon plan, and here especially is a clipped queen a decided improvement over those having their wings."

"How do you proceed in this latter case?"

"I catch the queen as before; and as soon as I have her I get a new hive and bring it to the old stand. I next turn the old hive half way around so it faces in an opposite direction from what it did, and place the new one just where the old one stood. Next, I place the cage, with the queen in it, endwise to the entrance, one end being within an inch of the center of the entrance. The bees returning from the fields, and which have, during the process of changing hives, been hovering around, now find the queen when they set up a hum, and fan their wings, soon attracting the swarm that now comes pouring into the hive by the thousands. As soon as the majority have gone in, and the bees become somewhat quiet, the stopper is removed from the cage, and the queen runs in with the swarm. If the queen is released as soon as the swarm begins to return, they will sometimes begin to swarm out again, not seeming to be satisfied that they have done all the swarming they ought to have done."

"I think I understand now, and will not bother you longer. Good day."

"Hold on a minute. I have not told you the best part that comes from having the wings of all fertile queens clipped. In all apiaries having more than four or five colonies, there is always sure to come a time when two or more swarms will issue together. If two or more swarms come out at once, I always use the catcher as first given, using one of the queens to secure the swarms. The other queens are caged with a few of their bees, and left in a shady place till I get all in readiness, when I place one at the entrance of each hive prepared to receive a swarm, except the hive that is to have the queen now in the catcher. I now carry the combined swarm around to the hives, placing one-half, one-third, one-fourth, etc., of the bees in front of each, according to the number in the combined swarm, letting a queen go in with each part, when the work is done. In this way it is no more trouble to manage several swarms where they come out together than it is to hive them if they were to come out singly. Thus much of the dread which used to be experienced when two or more swarms come out together is done away with."

"Well, this last is a part I had never thought of, and I am glad you kept me from going till you had told me. But I must be off. Good day again."

HEADS OF GRAIN FROM DIFFERENT FIELDS

[I solicit questions for this department; but they must be put on separate slips of paper, and marked "GLEANINGS Department." If you desire an immediate answer, say so at the time of writing, and a private reply will be sent you in advance before your question with answer appears in these columns; but questions that are mixed up with business matters will not only be subject to considerable delay, but possibly will receive no answer at all.—EDITOR.]

CANDIED VS. LIQUID HONEY IN COLORADO AND THE EAST.

Friend Root:—GLEANINGS has come to hand, and I am pleased to notice that my article is published. Of course, I read your footnote the first thing. I was surprised to read where you say I might change my mind if I were to study the markets in Colorado, and in the same paragraph you take exactly the same position that I did. Then I "smoled a smile." Just turn to page 304, and read the paragraph commencing about the middle of the second column, and then own up that I've caught you napping. If I change my mind you will have to change yours too. May be you see my whole article was intended to advise against putting candied honey on the market *in the East* instead of liquid, as I believe it would work incalculable damage. There is a lot more that might be said yet, but I will wait developments. I will say to you, though, of my crop of 8000 pounds that I raised last year, about 6000 was choice clover and basswood extracted honey which is all sold at about double the prices mentioned by Mr. Aikin, and I am not going to give up without a fight. I must, however, disagree with you where you call alfalfa honey the "best in the world." I got about 40 lbs. from your people that was very thick, but it was *no thicker than my clover honey*, and I have yet to find a single person who does not like the clover the better, and the great tendency of alfalfa honey to candy is very much against it, for I hold that it is an unnatural condition. CHALON FOWLS.

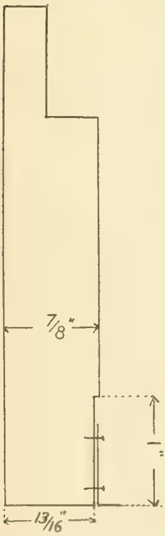
Oberlin, Ohio, Apr. 23.

[Yes, I grant that you did say something about locality and its bearing on this question; but the allusion is so brief, and the other remarks so prominent, that you lead one to think you would advise *all* bee keepers to sell uncandied honey.

If you can get twice as much money for your liquid extracted as Aikin can for his candied, then you have a big argument in your favor. But here again you miss the one point of locality slightly. In the West, Colorado and California, where honey is produced in so much larger quantities, and larger amounts per colony, and so far from the best markets, honey is cheaper than in the East. We must not forget the relative difference in prices. Mr. Aikin goes on the assumption that honey must compete with ordinary sugars or people will not use it. He says his locality, at least, will not take it if they can buy other sweets cheaper; but if your market will pay you your extra price you have a right to get it, and would be foolish if you did not; for your honey, as you put it up, is doubtless worth all you ask for it as compared with some goods that are sold in the same markets. By the way, did you notice Dr. Miller's Straw where he speaks about what Muth did in the candied-honey line?—Ed.]

ANGLE TINS TO SUPPORT SECTION-HOLDERS AND SECTIONS INSTEAD OF FLAT TINS.

On page 54, Jan. 15, Mr. W. B. Ranson calls attention to the fact that the flat tin that supports the section-holders was "too frail." I had the same objection to it, and also another one: Very often, when I went to pry the super loose from the hive, the screwdriver end of my scraper would pry the tin partly off. I found a way to avoid both objections. I have some galvanized iron (steel) cut into strips 12 in. × 1 in. Then in a folder, bend over one edge ¼ in., inside measure, so as to make a right angle, thus: The lower inside edge of the super should be cut out all the way across between the lock corners one inch wide and $\frac{1}{16}$ inch deep. The L shaped strips can then be nailed in, the under side just *even* with the lower edge of the super. See sketch enclosed. The iron should be *galvanized*, otherwise it will rust. No. 26 iron was the thickness that suited me best. Something thinner *would* answer, but I wanted to be *very* sure it wouldn't bend down under the weight of honey.



If the strips are put on as I have described—under side even with the lower edge of the super—then the bottom-bars of the section-holders will be raised above the lower edge of the super by the thickness of the iron used in making the strips. But that is no objection, as the bottom-bars are sure to sag that much through the middle.

The rabbet could be a little less than 1 in. wide, but it shouldn't be less than $\frac{1}{16}$ deep, even if the sheet iron isn't that thick. The reason is, that the strips—with the ordinary tinner's folder—can't be bent so as to form an exactly square corner; i. e., it will be rounding at the point of the bevel instead of a sharp *square* corner. By having the rabbet a little deeper than the thickness of the sheet iron used, the rounding corner doesn't touch the bottom-bar of the section-holder, and so, of course, can't raise that out of position as it *might* otherwise. John S. Callbreath.

Glen Spey, N. Y., Mar. 5.

[We have considered the advisability of using angle irons, or angle tins, in place of flat tins to support section-holders. In the first place, there is the objection of the expense; and then no one can really be sure that it will be any stronger. Our flat tins are all heavier now, and we do not believe that such would give any trouble. And, again, angle tins could not be used with the super for 4¼ plain sections. If you will look at the drawings of this super you will see the reason why. There is no doubt that the flat tins of a year or two ago were a little too light; but as they are now made we are of the opinion that they will obviate the difficulties of the past.

This idea, however, of using angle tins is very good; and if there should be demand enough for them we could supply them.—Ed.]

HOW TO FIND THE QUEEN; GENERAL DIRECTIONS FOR BEGINNERS.

Will you please tell me how to find the queen in a full colony of bees? I am thinking of putting in some other queens after a while. Grant Bailey.

Smith River, Cal., Apr. 9.

[If the bees are Italians, queens can usually be found at least on the third or fourth frame taken out of the hive. A practical bee-keeper will first pull out the center frame, and look for freshly laid eggs. Failing to find these he will take out another frame from another portion of the brood-nest. If he finds the eggs, then he has reasonable assurance that the queen is *somewhere* in this part of the hive. He looks the frame over carefully, and, failing to find her, he takes out the next one, each time following in the wake of the eggs. While it is no sure rule that the presence of freshly laid eggs in any portion of the brood-nest is evidence that the queen is in that part of the hive, yet, generally speaking, she will be found near them. If, for instance, I have found no fresh eggs in the center frame, and none in the next frame that I may have out on one side of the brood-nest, then I take the opposite side till I find the eggs. But suppose I have found them, and I do not find the queen. Well, it sometimes happens that a queen will suddenly leave a large fresh patch of eggs in one portion of the brood-nest, and then go clear across the whole hive to the other side, and begin operations there.

It not infrequently happens that one has to look over every frame, not once but twice. If she is not found on the frames then she may be on the bottom-board or inside of the hive. If the bees are black, and the queen of the same race, she will be more than likely to be in a bunch of scrambling bees in one corner of the hive.

If the queen is not found at the first or second going-over of the frame, I shut such hive up and go back in the course of an hour. This time I use very little smoke, and proceed as quietly as possible so as not to disturb the bees. If the queen once gets frightened she will run and hide. If the bees start to running and buzzing again, better shut the hive again to be visited later, for there is no use in wasting time.

I remember I had once been hunting for a black queen for perhaps fifteen or twenty minutes. I finally called to one of the boys in the apiary, and we together scanned both sides of the frames at once—he on one side of the frame and I on the other, for I thought I had caught a glimpse of her going on the other side of one comb just the moment the frame was turned toward me. Having caught sight of her, we watched her for the fun of it. My friend got back of a clump of bushes where he could not be seen. Curiously enough, this queen would hover around in a little space between the bottom of the comb and the bottom-bar. Whenever I turned one side of the comb toward me, she would quickly go on the other side. Upon my word, if she did not dodge back and forth as I turned the comb! No wonder I could not find her, for she had learned her trick of dodging, and kept it up. I have seen this with other black queens, and perhaps with hybrid queens, but I do not know that an Italian queen among Italian bees would ever do this. One very valuable quality of the Italians is their perfect at-homeness on the combs, whether the hive is open or closed; and one very mean trait of black hybrids and blacks is their fashion of running and scrambling over the combs, scaring the queen in their general rough-and-tumble confusion, one bee over the other. Whenever I have had occasion to find black queens in populous black colonies, I always feel that I have a "job" on my hands. About the first thing I do is to tuck my pants down my stockings; and then if I can have an assistant, he is asked to use his eyes.

Some bee-keepers, when they desire to find black queens, take all the combs out, take the hive and dump it in front of the entrance, set it back, and clap an entrance-guard over the now empty hive. The bees are all shaken off the combs, and the entrance-guard is eagerly scrutinized to see when her majesty strikes the obstruction. I do not know but, all things considered, this is about as quick a way to find black queens among black bees as to undertake the very uncertain and laborious method I have already described.

Some of those who use shallow brood-chambers advise shaking the black bees out of the combs by shaking the whole chamber, and then watching the bees as they crawl toward the entrance. It is said that the queen can be easily seen among the bees, and picked out. I have tried this a number of times, but have never been successful. In the first place, it took more strength than I had to do a thorough job of shaking; and in the second place it takes a pretty sharp pair of eyes to see the queen among a lot of bees an inch or so deep, all of them working toward the hive.

Unless one wishes to clip a queen's wings, to replace or sell her, it is a waste of time to try to find the queen. If one sees eggs regularly laid, and brood in all stages, sufficient stores, there is no need whatever of hunting a queen. Beginners often spend a lot of useless time in this way, sometimes leaving the combs exposed to the sun. Robbers start in the meantime, and there is a "general row."—ED.]

BEES AS A SPECIALTY; IS IT ADVISED? WINTERING OUTDOORS IN MINNESOTA.

1. Would you advise a young man who likes the bee-business better than any other to go into it exclusively?

2. If not, what other occupation could be conveniently engaged in along with it, to insure good returns? Give location in United States.

3. Where is the best location in the United States to make bee-keeping a specialty?

4. Could bees be *safely* wintered outdoors as far north as this, with the regular hive protected by a Dovetailed winter case only? They could seldom fly from Dec. 1 to Apr. 1, and would probably be covered with snow most of that time.

5. Would it be safe to leave out-apiaries packed thus where they will receive no attention from December to March or April?

6. If a person is in a locality where he can average about 50 lbs. of comb honey per colony, spring count, would it be wise to seek a better place to build up an apiary, or build up one where he is, taking severe winters into account? R. O. CLARK.

Lake Crystal, Minn., Apr. 10.

[1. No. Bee-keeping is too uncertain as a business for one to rely on it exclusively for his sole income. There are a very few specialists; but they either carry on the business very extensively, having 400 or 500 colonies, or else they live in a favored location. I always advise that bee-keeping be combined with some other industry.

2. Poultry-raising, fruit-growing, farming, practicing law, teaching school, any and all of them, according to circumstances and conditions, may work well with bees. Among the bee-keepers of our country are many professional men who keep bees not so much for the profit there is in them (although that is a consideration), as for the recreation and outdoor exercise that they afford. Then many farmers who are progressive * can keep a few colonies to considerable advantage. Twenty-five colonies in a location where there are no bees will very often pay much better than the same amount of capital invested in poultry or fruit-growing. Many a bee-keeper has found that, when he had a few colonies that could secure an average of 100 to 150 lbs. of honey, after he gets more into the business, and is actually running from 100 to 200 colonies, his average is cut down to 50 or 75, and generally much less than that.

3. I do not know where the best location is.

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* One who is not active, and up to date with farming, would probably be a very poor bee-keeper.

Some of the best, although they are generally taken up by residents on the field, are in Central and Eastern New York, Colorado, Arizona, New Mexico, Nevada, and California. In some of our newer States there are quite a number of fine locations that are not yet taken; but they are so far from the markets that the expense of transportation stands in the way.

4. Yes, providing that there were suitable windbreaks on the west and north sides—or, better still, windbreaks on all four sides. It makes a vast difference whether outdoor-wintered colonies, no matter how well packed, are properly sheltered from the piercing winds.

The presence of snow, and plenty of it, will be beneficial, providing it does not melt, run down into the entrances, freeze, and hermetically seal the same. The entrances must be kept reasonably clear, so that air can be obtained.

5. Yes, if protected by windbreaks, and if in sight of some farmhouse, or sufficiently near some dwelling to prevent the depredation of thieves. Thieves and mice are apt to make rather bad work on outdoor-wintered colonies. While out-apiaries may be left the whole winter long without examination, it is far better to take a look at the hives, even from the outside, occasionally. It has been our practice of late years to bring our out-yard home, for the simple reason that thieves have a fashion of tearing open the colonies for just a morsel of sweet. While they steal only a few cents' worth of honey, they actually rob us of a good many dollars' worth of bees and comb.

6. Better stay where you are by all means. If you can *average* 50 lbs. of comb honey you have a good location.—ED.]

HONEY FROM CALIFORNIA PRUNE-TREES; HOW MUCH MORE EXTRACTED THAN COMB CAN BE PRODUCED?

How much more honey ought bees to make in running for extracted honey than in running for comb honey when the flow is plentiful? How much would you estimate it per day per colony?

Prune-blossom yields an abundance of nectar here. Reading in the A B C book of the basswood-bloom, and the amount of nectar, reminds me of the prune-bloom and its nectar. I was plowing in prunes here during the bloom, and my clothes got all wet with the nectar. It blooms here about the middle of March, and lasts about ten days. What I am trying to get at is, if it would pay to keep bees here for the prunes in an extensive way.

Orangevale, Cal. D. C. JENKINS.

[Just how much more extracted than comb can be produced is something that can not be answered in definite percentages, as so much depends on the conditions, location, style of the hive, size of the combs, and the kind of honey-flow. A few bee-keepers claim that they can produce just as much of the one as of the other; but the great majority agree that more extracted can be secured than of comb. Some put the figure at 25 per cent. Others go even so high as to make it 50 per cent more. It is not to be understood that bees will gather more honey in the extracted form than of comb; but more of the former can be gotten *in marketable shape.*

I have never yet heard of honey being gathered from prune-tree blossoms; and if the amount anywhere near equals the amount from basswoods, the prune-trees in your locality must be tremendous yielders of nectar. When you get a good sample of genuine prune-tree honey, that you are sure has no other honey mixed with it, I should be glad to have you send me a sample by mail. I have never tasted of such honey, knowingly, and should like to know what it is like.—ED.]

REQUEENING A WHOLE APIARY; HOW SHOULD IT BE DONE?

Friend Root;—By request of a friend I write this, and ask your opinion as to whether it will be best for him to buy several select tested queens from such men as Doolittle, Alley, Root, Miller (and perhaps others), to raise queens from, or buy an extra-good imported Italian, and breed from her. I have charge of his apiary, and shall want at least 250 or 300 queens, possibly more. Last October Mr. M. bought queens from several breeders, both north and south, and I must say I never saw so many *worthless* queens in one apiary. As the number he bought was about 180, you see the outcome was a losing one to him. Breeders who put out the finest advertisements sent the poorest queens. Fully four-fifths of them were impurely mated. One breeder sent a select tested, and I think she must have been so, from the number of *black* bees she produces. Naturally Mr. M. is a little shy about buying queens *this* year. We shall want the queens in June, and I advise buying an extra good imported one and raise our own. Mr. M. wants your opinion. We want pure Italians, but don't care for bright colors; but we want bees for *business.* Personally I have never yet found any thing better than leather-colored Italians.

[I never would advise requeening an apiary by purchasing all the queens, or a large part of them, from the different breeders. In the first place, it would be too expensive; and in the second place, queens that have been through the mails are never quite the equal of those that have never seen Uncle Sam's mail-bags. Of course, this is only an opinion, but it is based on quite an extended observation, and on the fact that queens reared in the yard seem to be better than the great majority that are purchased. Those reared by the old-fashioned methods will not be as good as those raised by the Doolittle plan under the stimulus of the swarming fever, or a stimulus brought on artificially by feeding a little every day.

In the rearing of queens, one of the most important things to be considered is stimulative feeding, especially during that time when cells are being reared by the cell-building colonies. All such should be very strong; and on being fed a pint or half a pint daily they very lavishly supply the cells with royal food, and this is what makes good queens.

I am afraid some queen-breeders, in the rush of the season, are not always as careful to observe this point as they should be; and to fill orders promptly they may sometimes yield to the temptation of taking queens that look well, but which have been reared either out of the swarming season, or else the colonies that built their cells were not stimulated as directed.

My advice would be to purchase four or five select queens from as many different breeders —queens to be the very best. Now, although each breeder will be honest, and endeavor to give you his best stock, either the journey through the mails or some unaccountable circumstance will result in one or more of the queens not coming up to expectation. Not all queens will come anywhere near matching the qualities of their mothers which the honest breeder had selected for the very purpose of breeding a superior stock.

Where one wants to requeen a whole apiary he should himself rear nine-tenths of the queens. Until some one finds a better method I would recommend the Doolittle plan; but if one has only a few colonies, and has not had much experience, he had better buy his queens unless he wants a little fun in learning how to do the work himself.

For general purposes there is yet no better stock than the leather-colored imported. Some of them are exceptionally good.—ED.]

IF A JUMBO HIVE IS THE BEST FOR EXTRACTED, WHY IS IT NOT EQUALLY GOOD FOR COMB?

I have been much interested in the discussions appearing in GLEANINGS concerning the proper size for hives; and while the weight of testimony seems to be in favor of the 8 frame L. hive, or near that size, for comb honey, I believe it is quite generally conceded that a larger (or jumbo) hive might be best in most localities for extracted honey. Now, I infer from what has been said upon the subject that the Dadants extract nearly all of their honey from supers, and the puzzling question that confronts me is this: If, under similar conditions as to season and locality, bees will store more honey in supers in a large than in a small hive when run for extracted, why will they not when run for comb honey? As I have paid but little attention to bees of late years I should like it if some competent bee-keeper would lead me, and may be others, "out of the woods" in this matter. In GLEANINGS for Dec. 15, 1899, appeared a good article on the subject by Mr. L. Stachelhausen. Will he not be kind enough to contribute his promised "method" in his next article soon?

Cobleskill, N. Y. S. A. BURNER.

[If it is a fact that a large hive is best for extracted, it is perfectly natural to assume that it will be equally good for comb, and I am not sure but the assumption is correctly drawn. This whole question is one of locality. Where the honey-flow is short, lasting only two or three weeks, and only moderate, and no honey worth speaking of at other times during the whole season, then unquestionably the eight-frame Langstroth capacity is large enough. With a larger hive in such a locality, the surplus would probably all be crowded in the brood-combs. But in a locality where the honey-flow continues for a month or six weeks, or where there are two or three such flows aggregating anywhere from two to three weeks each, then the large hive for extracted honey is unquestionably the better; and I should be inclined to believe that it would also be better for comb. But we must not forget this one fact: That, while the bees will gather as much honey whether running for extracted or comb, it is not so easy to get so much marketable honey in sections as that in a liquid form.—ED.]

QUEEN-EXCLUDERS FROM FOUL-BROODY HIVES.

Having purchased a number of queen-excluders that had been used one season over bees badly affected with foul brood, what precaution should I take in using them again? Would it in any way endanger others, or should they be discarded altogether?

Tilsonburg, Ont. W. E. YOUNG.

[While there is a possibility that queen-excluders in foul-broody hives *might* not carry infection to colonies in hives on which they were placed, yet I would never take any chances. I would put the whole bundle in a kettle of water and boil not less than two hours, this extent of time being necessary to kill the *spores;* for, as Mr. Cowan points out, spores are very different from microbes.--ED.]

DISCOURAGING FOR SOUTHERN CALIFORNIA.

It has been another dry winter in Southern California. It has rained only about 8 inches in this locality. The sage is in bloom now, a month ahead of time, but it does not amount to much. I don't think there will be any surplus honey here this season; and from what I can hear it is worse down south.

San Benito, Cal., May 2. A. BORGMAN.

EXTRACTING-HOUSE ON WHEELS.

I would thankfully hear from any reader of GLEANINGS who has had experience, how best to build a practical and convenient extracting-house on wheels, to be set close to hives in out-apiaries, carrying all requisites along. A. MOTTAZ.

Utica, Ill., Feb. 21.

[I should be glad to receive photos and description of a good extracting-house on wheels. —ED.]

BEE-PROOF ARMOR-SUITS.

On page 94, Feb. 1, you mention Mr. Coggshall's bee-proof armor-suits. Can you not give a description of them so that they can be made from it? E. D. HOWELL.

New Hampton, N. Y.

["Bee-proof armor-suits" was a name adopted by me as half a joke on the Coggshall bees to indicate their general temper. Why, don't you know that Coggshall trains his bees to sting, to keep thieves away from his out-yards, and any thief who would steal from one of the Coggshall out-yards would be flying into the hands of fate. Joking aside, the bee-suits spoken of are nothing more than a pair of cowhide boots, pants tucked in, a pair of gloves with long sleeves that reach well up on the arms, and an ordinary bee-hat and veil—sometimes veil and hat are part of the waist. In all other respects the clothing is the same as that used by any one else.—ED.]

BEGINNERS QUESTION BOX BY E. R. ROOT

A. B. C., Ida.—Killing off the drones before the swarming season may possibly have a slight effect in the prevention of swarms ; but I should place very little reliance upon it. To destroy drones, use entrance-guards, or, better still, Alley traps. But it is better to prevent these undesirable drones in the first place by giving the bees nothing but worker-combs ; and if any of the combs you have have a good many drone-cells in them, better cut the wax out, melt the wax up, and give the bees frames of foundation instead. It is very expensive and wasteful to rear drones in large numbers and then destroy them afterward by trapping.

F. F. S., W. Va.—We can scarcely advise what hives to select for your locality without knowing some of the special conditions. If you desire to run for extracted honey only, and your honey is medium or dark-colored, or what is called southern honey, we would recommend you to select the ten-frame Dovetailed hive. If you find your best market is for comb honey, and your locality furnishes white clover and basswood, and some other equally good honey, we would recommend to you the eight-frame Dovetailed. The Danzenbaker is considered by many to be the best comb-honey hive in existence. The capacity of the brood-chamber is about the same as the eight-frame Dovetailed standard Langstroth frames.

QUEENS FROM THE SOUTH ; ARE THEY INFERIOR TO NORTHERN BRED?

S. C. M., Wis.—While we might be able to rear a very few queens in April, yet our locality is such that we should probably sacrifice one or more colonies in doing so. We can not do much at queen-rearing before the middle of May, as a rule. Some years we might raise queens the first of May, and possibly the last of April ; but taking one year with another we should not be able to rear queens before the time I have named. It is true you may be further north ; but you may be in a locality more protected, for the isothermal lines of heat vary greatly from the direct lines of latitude. New York, for instance, while in about the same latitude as Medina, is very much warmer than the locality of Cleveland ; and Chicago, also in nearly the same latitude as Cleveland, is very much colder. Oregon and Washington have, in the main, the warmth of the Carolinas and northern part of Florida. The coldness of Labrador is proverbial, and yet Paris, on the same line, has the average temperature of New York. But are you sure you are right in deciding that southern-bred queens are not as good as northern-bred? Some statements were advanced to that effect, but I have never seen any proof of it. Some of the hardiest queens we have came direct from southern Italy, even in spite of their long journey to this country.

HOW TO PREPARE FOR A LONG BICYCLE TOUR IN THE WEST.

F. J. C., Ida.—Replying to yours of Apr. 9, I would state that about as much luggage as you can afford to carry on a bicycle, if you have one of the modern machines, is somewhere about 25 or 30 pounds. I would not attempt to carry any bedding, but take along an army blanket and rubber blanket which you can lay on the ground to keep dampness off. To keep warm on a cold night, put your head under the covers, and your breath will help to keep up the warmth. You will also need to take along plenty of matches, so that you can build a fire wherever there is any loose material to burn. If you go through a wild country you will need the fire to keep off cayotes. You need to see that your machines are in first-class order before you start, and then take along with you repair tools, as spokes, an extra inner tube (if it is a double-tube tire), plenty of tire tape, a good lamp, cement, needle and thread, as well as a little brush broom with which you can dust yourself off when it gets too thick. It may be advisable, if you are going through a wild country, to take along a revolver. Dogs are sometimes very troublesome, and I have had to defend myself against them at the point of a gun, as some of the larger dogs are pretty fierce. You should not neglect to carry along with you a bottle or two of milk ; for when your strength begins to fail, there is nothing that will "brace one up" so much as a good drink of milk. You can buy at the drugstore Horlick's milk powders, or, better, Horlick's milk-powder tablets, which the Horlick Milk Co. put up especially for bicyclers. There will be days when your strength will be well nigh given out for want of nourishment, and you will need something concentrated that you can use in emergency. I would not drink too much water on the route ; but whenever you can, take a good drink of milk at a farmhouse, paying for it, or at least offering to do so, as it creates a better feeling. The majority of farmers' wives will not take pay for milk.

The Brosius pure-food bill is now up for consideration in Congress; and every bee-keeper interested in the suppression of glucosed adulterations is requested to write to his Congressmen at once ; and not only that, but get as many of his friends as he can to do likewise.

EDITORIAL
BY
E.R. ROOT

Now that the Interstate Commerce Committee has reported favorably on the Brosius bill, it is the duty of bee-keepers now to bring a pressure to bear on the speaker (Henderson) of the House so that the bill may get a hearing at an early date.

W. A. SELSER, familiarly known as the honey-man of Philadelphia, is very sick with typhoid fever, and for a time it was thought that he could not recover. Although he is still a very sick man we are glad to inform his many friends that the crisis has passed, we hope, and if he does not have any setback he will get well

How to find a queen seems like a simple thing to an old veteran; and yet all of them know it is often a very difficult task. On page 396 I have described the methods that many bee keepers practice, and now I desire to know whether any better or any other method has been devised. It will soon be necessary to go through the apiaries to clip the queens' wings and replace others. How to find the queen quickly is something worth knowing. Let us hear from the brethren.

IF you have not yet written to your Congressmen, urging them to support the Brosius pure-food bill, please do so at once. Do not assume that some one else with a little "more political pull" will have more influence than you. Congressmen like to hear from their constituents; and you may rest assured if the good people of this land, who care for pure-food legislation, do not write to their Congressmen, that the glucose interests, and all other interests connected with adulterating, will see that the pure-food bill is killed. It is a splendid measure, and ought to receive the support of every member of Congress.

AS the reader will see by consulting the columns of this issue I have crowded in a great deal of editorial work, and in consequence some of our contributed matter has been left out. It is much easier to get out a journal largely if not all contributed matter; but the editor, from his peculiar position, is enabled to take a bird's-eye view of the field at a time, and he ought to be broad enough to state the best practices in vogue, without regard to locality or individual colorings and prejudices. If our readers prefer less of the editorial and more of the contributed matter, I should be glad to have them tell me so.

PYRETHRUM FOR KILLING BEES.

VERY recently, being suspicious of one colony in our yard, and fearing it might have some contagious disease, and not desiring to take any chances, we gave the colony a good sprinkling of pyrethrum powder. This was done at night. In the morning every bee was "as dead as dead could be." The entrance was closed, and all taken to the boiler furnace and burned. The object in using pyrethrum was to prevent any bees from escaping while the hive was being removed to the place of destruction. In bad cases of foul brood, as a precautionary measure it might be well to kill the bees with pyrethrum powder, then the whole can be burned or destroyed. Of course, in any ordinary case of foul brood it is not necessary to kill the bees; but when one attempts to burn a very bad case, a few live bees are liable to escape, and so carry the infection to other hives which they will surely visit if they can not find their own, which, of course, has been removed to be burned.

DR. MILLER'S BEE-HORSES.

WHEN Dr. Miller and I arrived at his home after the Chicago convention we found that the bees were having a little bit of fracas among themselves. They had gotten into a hive from which the bees had died, and as a result there was a "general row." I suggested that, inasmuch as the combs were dry, they be left just as they were.

"Yes, that is my practice, in such cases," said the doctor. But during that afternoon, when we went through the apiary there were plenty of skirmishers ready to sting whenever one showed himself. Well, Dr. Miller's horses wanted to drink, and he was equally anxious to accommodate them. They were unhitched from the buggy, and leisurely walked down toward the apiary near where the pump was. I could see at once that they knew that cross bees were in the air by the way they switched their tails and tossed their heads. At first they hesitated, but finally they walked right through where the cross bees were flying. Notwithstanding the bees were so cross that Dr. Miller and I were both veiled to keep from being stung, those horses continued right toward the crossest colony, near which was the trough. The animals seemed to think that, if they could get their heads *down into* the trough, the bees would not attack them, and such was the case.

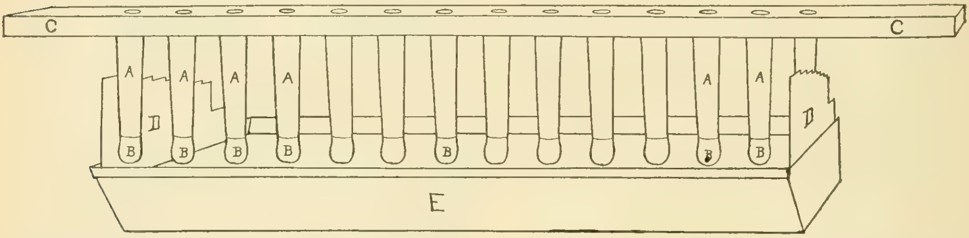
Dr. Miller began pumping, and the horses plunged their noses deep into the water, and drank, and drank, and drank, to their fill. Once in a while they would raise their heads and take breath; but when there was an onslaught of bees they would duck their heads down again into the water.

When they started back they would keep their heads shaking and dodging, for all the bees seemed to concentrate their attacks at the horses' heads. But the horses got back into the barn without so much as a sting. "I doubt," said the doctor, "whether they would be so unconcerned if they were hitched up to the wagon."

DOOLITTLE QUEEN-CELL CUPS BY THE PECK.

I PRESUME some of our readers are not familiar with the Doolittle method of making cell-cups with a single stick. For the benefit of such I will say that Doolittle takes an ordinary wooden rake-tooth, whittles and sandpapers the end down to the shape and size of a queen-cell cup as made by the bees when about half built. This stick is dipped into water, then dipped into melted wax a little more than half an inch. It is twirled in the air, to permit of even cooling, and to prevent a drop of wax from forming on the end. It is then dipped again, but to a less depth, or to within $\frac{1}{16}$ inch of the former dipping; and each time the stick is twirled between the fingers so the wax will cool evenly; and when the cell-cup is finished the stick will look like a small drumstick, the head being the cell.

An improvement on this method of making is to take a dozen or so such sticks and mount them in a cross-stick, about an inch apart or what would make when completed practically the head of a wooden lawn-rake. Mr. W. H. Pridgen, of Creek, N. C., told us it was not necessary, as we had supposed, to have the sticks revolve, each one simultaneously with the others. The teeth of this rake-head are to be dipped into a pan of wax, about $\frac{9}{16}$ inch; that is, each head or cell-forming stick will be plunged into the melted material that depth. It is then drawn out, when immediately the surplus will run down and form in a bubble or drop at the end of each stick. The whole rake-head is then given a quick jerk, dislodging each drop.



The device that we have used is shown in the accompanying diagram or sketch. C C represents the back of the rake; A A the rake teeth; B B B the finished cell-cups at the last dipping. E is the pan of melted wax kept hot by two oil-stoves. D D are two pieces of tin, notched like a pair of steps. At the first dipping, strip C C rests down in the lowest notch on each side at D and D. When in this position the ends of the sticks are submerged $\frac{9}{16}$ of an inch in the wax. The whole rake-head is then withdrawn, held a moment while the films of wax cool; and as the bubble forms on the bottom, the whole head is given a quick jerk as explained. At the next dipping the stick C C is set down on the steps next higher up. This leaves the cups dipped to within $\frac{1}{16}$ as deep as they were before. In this way the dipping is continued, each time the stick C C resting in the steps next higher of D and D. When the rake, so to speak, reaches the top step, the work is complete. The cell-cups are removed by immersing the heads in water, after which they may be easily pulled off with the fingers. Any one with ordinary ingenuity can make one of these; and if twelve sticks do not make enough he can use two dozen or any number. W. H. Pridgen writes that with twenty pegs in his arrangement he can dip at the rate of 2000 an hour; and as Mr. Pridgen is one of the best-posted and most expert queen-breeders in the country he might be prevailed on to sell queen-cups. I have no doubt many would prefer to buy them rather than make the apparatus as above shown. I do not know that the device illustrated is the same as that used by Mr. Pridgen; but it is one we evolved from some things that Mr. P. said.

"BEE-KEEPING FOR PLEASURE;" SEE PAGE 385.

IN our last issue I promised to give a picture of an ideal shade, and on page 385 will be found the one I had in mind.

Some of the shade-board advocates will claim at once that there is altogether too much shade—trees are too large, and foliage too dense. I have another photo showing a different view of the yard, and in this it is shown that the hives are not under the big trees in the rear, but under smaller ones in the foreground—fruit-trees of modest height, and a moderate density of foliage.

My ideal location for an apiary, as I have before stated in these columns, is an orchard or a young grove having trees with foliage not too dense. In either case the limbs should be trimmed high enough so the sun's rays may strike the hives till about nine o'clock, and again at three. As the leaves of all deciduous trees fall every year, there will be practically no shade on the hives during at least six months of the year, when the sun's rays are most needed. When they are not desired, nature automatically throws a beautiful mantle over the entire apiary.

And yet there are some, I suspect, having the best kind of shade-trees, ideal in every way, who will set their hives out in the open, where the apiarist and the colonies under so-called shade-boards will be subjected to the influence of a "boiling hot sun." Notwithstanding that these artificial make-shifts project at front and rear, only partly protecting the hive during the day, and require to be held down by a stone weighing 15 or 20 pounds, those same apiarists probably will insist that this form of shade, in spite of its disadvantages, permits of earlier breeding, and more honey than those shaded by nature in the manner I have described.

One who will scan the picture closely will see that the hives stand on cement bottoms or foundation. While this will effectually prevent all growing of the grass and weeds near the hives, and make it easy to handle the lawn-mower, I should be inclined to believe that so much solid masonry during the winter would be a rather cold bed-fellow.

As one looks over this apiary he can not but envy the owner the comfort he apparently enjoys in taking care of bees for pleasure as well as for profit. Imagine the delightful coolness of working over the hives on a hot summer day in such a yard. There would be little or no hanging out of the hives, probably, and the bee-keeper could set the combs down here and there without danger of the sun melting them or in any way injuring the bees.

The photo was sent us by a friend whose name I have misplaced; but he evidently resides at Ballston Spa, N. Y. I should be glad to have the sender of it give me his name.

SPRAYING FRUIT-TREES WHILE IN BLOOM.

THE following letter, just received from Prof. W. J. Green, of the Ohio Experiment Station, will explain itself:

Mr. A. I. Root:—I inclose a letter from the *Farmer's Guide*; also a clipping from that paper, which was sent me by the editor. I knew some time ago that there were people who believe that spraying trees when in bloom is more beneficial than just before or just after, but I was not aware that any one would give such advice as Mr. Stahl does. Mr. Stahl's position is such that he can do great harm in this way, because he has numerous correspondents, and it is quite likely that he will induce a great many to spray trees when in bloom.

I was present at the New York State Horticultural Society meeting last winter, and heard the statement made that there were fruit-growers in the State who intended to spray their trees when in bloom, and pay the penalty if fined, as there is a law in that State against spraying trees when in bloom. If this sentiment becomes at all universal among fruit-growers it will work great injury, not only to bee-keepers but to fruit-growers as well. W. J. GREEN.

May 9.

The letter referred to from the Guide Publishing Co., of May 7, is as follows:

Horticulturist, Experiment Station, Wooster, Ohio.

Dear Sir:—Herewith find page of last week's issue of *The Farmer's Guide* in which we criticise the advice given by William Stahl, of Quincy, Illinois, on spraying fruit-trees in full bloom. We are in receipt of a letter from Mr. Stahl in response to our criticism in which he says:

"I regret that you are just a little behind the times in giving your advice. Spraying in full bloom is nothing new to me, as I have been experimenting in this direction for several years. My own trees have not only been sprayed once, but have been sprayed twice, and I have most excellent prospects. It may be well to state, in connection herewith, that, in the grape-growing section of Nauvoo, which is only fifty miles north of here, and consists of five hundred acres, almost every acre will be sprayed this year in full bloom."

Mr. Stahl enclosed a copy of a letter from Mr. J. H. Fishel, a fruit-grower of Grant County, Indiana, in which he says that he has been spraying in full bloom for three years, and that his fruit is ninety per cent perfect, and that he has plenty. He intimates that he has kept his plan a secret, and adds:

"I am aware that the idea prevails that it kills honey-bees, and I have found, also, that it is not necessary to have bees to fertilize the bloom of fruit. I have been frequently asked why I have such perfect fruit and so much of it when others have scarcely any, and what they have is not worth any thing. I do not tell my secret, for fear of being blamed of killing bees."

Now, if we are behind the times we want to know it and to know the safe, sure, and good way to catch up. If spraying in full bloom is better than otherwise, if bees are not needed in fertilizing and pollenizing, and that it is right to kill them in secret, or otherwise, we should like to know it.

We are addressing this letter to seven experiment stations besides yours, and await the replies with considerable interest. THE GUIDE PUBLISHING CO.

Huntington, Indiana, May, 1900.

The clipping from the *Guide*, which we believe to be absolutely correct, is as follows:

A farmer came into *The Guide* sanctum Saturday, bearing a look of unusual disgust. He had recently ordered one of Stahl's spray-pumps, and with it had received a letter from the manufacturer vouchsafing to him a great secret, which is furnished with every spray-pump upon request, which secret is as follows:

"Give your vines and trees one additional spraying this year when in full bloom, using for this spraying Bordeaux mixture, and adding thereto Paris green in the proportion of one pound to 160 gallons of Bordeaux mixture."

The manufacturer states that, where the spraying was done when the trees were in full bloom, the results were simply wonderful. If the sprayer manufactured and sold is of as much doubtful utility as the above advice is unsound, then would we hesitate to buy it or advise its purchase. Any benefits that spraying might have on the fruit while the trees are in full bloom, over omitting the spraying at this time, is surely overcome by the destruction of the fruit-growers' best friends, the bees. Spraying with Paris green at the rate of one pound to 200 gallons of water is sufficient to destroy injurious insects; but when the amount of Paris green is increased, the destruction of the honey-bees and other pollenizing insects is enhanced. This is so plainly recognized in Michigan, New York, and other States, that laws have been passed forbidding the use of poisonous spraying mixtures while fruit-trees are in bloom.

We have gone through the bulletins of the experiment stations on file in this office, and do not find in any of them a recommendation to spray while the trees are in full bloom. On the contrary, we find advice to *never spray a fruit when it is in blossom*. This we find italicized in Bulletin 142, Cornell University Experiment Station, Ithaca, N. Y. Following the above words are: "You can reach the insect and fungous enemies just as effectively, and in some cases more so, either just before or just after the trees bloom."

The foregoing bulletin is by Prof. M. V. Slingerland, one of the best entomologists in this country, and what he says upon the subject is reliable, and is at variance with the advice given by the manufacturer of the Stahl sprayer.

This man Wm. Stahl, while prominent as an advertiser, may not know very much about the subject of spraying. To tell the editor of the *Farmer's Guide*, and practically say to all experiment stations that they are "just a little behind the times," is as egotistical as it is impertinent. It is to be regretted that the State of Illinois does not have a law against the spraying of fruit. Such laws are already in force in Michigan, New York, Colorado, and bills have been or are being introduced before many of the State legislatures. When I was in New York recently I learned that the most progressive fruit-growers are not in favor of spraying during bloom. They state that it is not only unnecessary, but that it actually kills their very best friends, the bees. Of course, there are a few who are of the contrary way of thinking, but they do not represent the up-to-date growers.

EXCESSIVE BICYCLE-RIDING AND HEART TROUBLE; A WARNING TO THE BOYS.

OUR readers will remember Harry Howe, one of W. L. Coggshall's lightning operators—a man who, with three helpers (boys), actually extracted 1400 lbs. of honey with a non-reversing extractor, taking the combs out of the hives, shaking the bees off, carting the combs to the extracting-house, and returning the supers again to the hive, putting the honey into

220 kegs — in the short space of an hour and a quarter. It was this same Harry who had the reputation of doing about four men's work in a day. He was young, active, lithe, and in the very pink of health. Besides making some big records in bicycle-riding he climbed the Ithaca Hills—something that I believe no man besides himself ever did, without dismounting. Well, this same Harry went to Cuba, and in going over the island to look up locations he used, of course, his ever faithful steed the wheel. I have just received a letter from him, and from it I make a short extract which is full of warning to other young ambitious boys who sometimes overestimate their physical strength. Harry writes :

> I have been sick for some time, and unable to attend to business. I am at present in one of the United States military hospitals. This will explain why I have not ordered those hives. My trouble came from too much bicycle, etc. It is a form of heart trouble. The doctors have not decided yet how I am to come out.

This tells its own story, and carries its own lesson.

It is said that confession is good for the soul ; and I do not know but I had better tell a little of my history. Our older readers will remember how, when the bicycle first came out, I used to make long runs over the country, visiting bee-keepers, and how sometimes I would ride over a century at a run, one time making a run of 115 miles in 8½ hours, 80 miles in one afternoon, and again making 20 miles in 70 minutes, and this over common roads. While this time has been beaten repeatedly by two or three hours for the century by men who are trained up to it, yet I found it is very seldom that one who makes it a business to sit at his desk is *fool* enough to try to ride such distances in such time. Candidly, I should much prefer to brag about big records than to confess to being a "fool." That seems like a strong term, but I use it advisedly, as the reader will see by what follows.

Soon after making some of those century runs among bee-keepers, and after I had returned home, for weeks I could not sleep nights, and the following spring found me breaking down with nervous prostration. My friends sympathetically hinted about my having "worked too hard." Yes, I *had* overworked on the bicycle, but not at my desk. But this was not all. I was under the doctor's care for a year. I kept running down in weight until I ran down to 115 lbs., and my normal weight was 140. I remember one good friend of mine (I had just started on the beef diet) chokingly (not jokingly) saying, "Why, my dear man, you have one foot in the grave already, and you will die, sure." But I had a conviction all the time that I was "going to pull through." I had faith in beef and hot water to undo even excesses on the bicycle. I hung to the treatment ; and by the advice of my physician, Dr. J. M. Lewis, of Cleveland, I rode the wheel some two or three miles a day — just enough to keep up a very light exercise ; delegated my office work to others, and took things as easy as I could. In a few months' time I began to mend, and kept on mending, and putting on flesh, until I reached 155 pounds. I went off the diet gradually, and have been comparatively well ever since.

Right in this connection are two morals. One is, do not overdo on the bicycle. Second, when you get sick, and your friends begin to talk about your crawling into the grave, go on to the beef diet.

Perhaps the kind reader who has taken my advice on bee-matters wonders *why* it was that I rode to excess. Those of you who have never had any experience in the exhilaration of "second wind" know nothing of it. This new strength, or new something, comes on something like this: One starts off in the morning, perhaps for a hundred-mile ride. He may feel tired. He is weary of legs, and out of breath ; but he keeps on, for by past experience he knows if he persists the so-called second wind will come. He begins to experience a feeling of exhilaration. This is soon followed by a buoyancy like unto flying, for the wheel shoots ahead as if on wings. Hills and rough roads seem not to be in the way. There is no labored breathing, and the bicycle really seems as if it were propelled by a motor.* I thought that, as long as I felt like this, could eat well, and could ride without fatigue, even at the rate of eighteen miles an hour, as I have done on some of my long rides, where the roads were good, I was perfectly safe. Indeed, on one of my last century runs I came into Medina on the bicycle at a fifteen-mile gait. I felt so well that I ran up the stairway to the office two steps at a jump. So deceptive was that second-wind sensation that I was prepared to do almost any thing in the way of athletics — at least I *thought* I was.

While I was never intoxicated, in the accepted sense of the word, yet I believe when one gets what he calls *real* second wind he feels as if he could almost fly. It is this sensation of buoyancy and strength that leads many a rider on his bicycle to feel perfectly safe. Why, as long as he is not tired, and can outrun any one without fatigue, or without getting out of breath — *he's all right.* There never was a bigger mistake.

Now, in confessing my part of playing the "fool" I do not mean to implicate Harry in the same way ; and yet he *may* have fallen into the same error I did — overestimating his strength *by the way he felt.*

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* A teacher of athletics told me that the weariness comes about because the heart is not yet tuned up to the higher pitch. Continued labor calls for extra effort on the part of the vital organ ; finally it yields to the pressure, and beats faster and harder. This, I was told, is a provision of nature to enable man or beast to perform more arduous physical labor than is his wont. This tuned-up condition of the system, or second wind, as we familiarly call it, if rightly and temperately used, is a good thing ; but one needs to know when he has reached the danger-limit, and not think within himself, because he is not tired or out of breath, that therefore he can go on in the same foolish way.

Did you know that the Brosius pure-food bill is up for consideration ? If you are a bee-keeper, and interested in pure food and the suppression of adulteration, write to your Congressmen at once, urging them to support it.

OUR HOMES,

BY A. I. ROOT.

Peace on earth, good will toward men.—LUKE 2 : 14.
As ye would that men should do to you, do ye also to them likewise.—LUKE 6 : 31.

It is an easy thing to listen to good sermons, for there are plenty of them, if people would only attend the places of worship ; and I came pretty near saying, it is an easy thing to *preach* good sermons, for most of us can do a little preaching occasionally, especially when we get to discussing the faults and inconsistencies of our neighbors ; but it is another thing to put in practice the golden rule, and to work for peace on earth, good will toward men. A good many times we can better realize what these texts mean by making a practical application of them to some business transaction than by listening to sermons or by preaching little sermons in the way I have suggested. When we are discussing the ways in which other people fail to apply the golden rule, we are apt to be quite enthusiastic for truth ; but when it hits our own *selves* and our own *pocketbooks* our enthusiasm is likely to grow faint. A great many of the friends are interested in gardening ; and I wish to tell you at the outset that in this little transaction I do not mean to advertise our seeds nor to advertise myself as a seedsman, nor even as a Christian. Let me say in my own defense, however, I never thought of putting the following transaction in print when it occurred. The letters I wrote in regard to it were written without a thought that anybody would see them except the good friend to whom I wrote ; and he *is* a good friend of mine, I am sure—yes a better friend because he tells me plainly and squarely wherein I have been guilty of *omission* if not of commission. And now for the story.

If you look in our brief seed catalog you will see that we advertise 10 lbs. or more of spinach seed at 12½cts. per lb. This is quite a low price, and the margin is very close ; but I enjoy helping market-gardeners by giving them low prices where they want a considerable quantity of staple seeds. For several years we have bought spinach seed by the quantity for 8 to 10 cts.; but last fall it ran up unexpectedly. In fact, we got an order some time in the fall, the money with the order, at 12½ cts. per lb.; but before I could fill the order I had to pay 15 cts. for seed. I explained the transaction to my friend, however, and he very kindly paid me what the seed cost, so I was not out of pocket. Of course, I must advance the price in the seed catalog ; but this is something I hate to do, and I wanted to be very sure there was a *general* advance in the price of spinach. By a little correspondence I found two growers who would sell me seed at 10 cts. I considered them both to be good responsible men. I purchased a lot from each one, and commenced the year with spinach seed at the old price. The two following letters indicate the quantities of spinach we often sell to the market-gardener :

Dear Sir :—Find inclosed $2.00, for which please send 16 lbs of Bloomsdale spinach seed.
Water Valley, N. Y., Feb. 26. E. GRESSMAN.

Dear Sirs:—Find inclosed $1.00 for 8 lbs. of Bloomsdale spinach seed. I got 16 lbs. of you a spell ago, so I thought you would give me the 8 lbs. at 10-lb. rate.
Water Valley, N. Y., Mar. 30. ELMER GRESSMAN.

The orders were filled promptly, and nothing more was thought about it until the following came to hand :

Sirs:—The 16 lbs. of spinach seed I received from you in March is no good ; and the worst of it is, I recommended your seeds to my neighbor, who took 10 lbs. It is going to be a hard blow on him, as by sowing now we can not come ahead of the rush and get the high prices. It may make half the difference. When I discovered the seeds were not good I would rather have lost $10.00. I wouldn't have felt as bad, but I insisted on this man getting his seeds from you —that your seeds were reliable, and you used the same seeds you sent out, and knew what they were. It puts me in a nice place, you see. The first seeds he got were not good. It was only yesterday morning (Sunday) I found it out. I knew by driving about 30 miles I could get seeds even it was Sunday, so I concluded to go. Some of my people were opposed to it, but I said if I had to commit a wrong to make a wrong right I should do it, or to make right as much as I could my neighbor's wrong so he might have the seeds early Monday morning to sow, as it might rain Tuesday and Wednesday, and even longer, and away goes his crop.

I borrowed the money to get the seeds. My loss, besides, on the crop, is $2.00 for seeds ; 31 cts. for freight ; 10 cts. for letter and sending money, making $2.41. I replaced my neighbor's seeds, whether I get any thing or not. I have made up my mind never to recommend any more seeds, no matter who the firm is. If I had let this man get his seeds where he wanted to, they would have been nearly up now, and would be several days ahead in the market, hence the difference in the prices.

It is difficult for me to understand how people can put a worthless article on the market to get good money for it. The second lot of seeds I sent for are coming all right. ELMER GRESSMAN.
Water Valley, N. Y., April 24.

You may be sure I was a good deal worried when the above came. Our readers are perhaps aware that most seedsmen decline to be responsible any further than that they will replace any seed after they have had good evidence that it is bad. But this was a more serious matter, a good deal, than simply the value of the seed. I find by the copy-book I wrote promptly to friend Gressman as follows ;

My good Friend:—I am exceedingly sorry for all the trouble you have had ; but you are certainly mistaken in saying the spinach seed we sent you is not good. We sowed the same seed in the greenhouse, and it came up beautifully, and we are now gathering the nicest spinach we ever raised. There was certainly some other reason besides the quality of the seed for your failure. We will at once plant some more of the seed outdoors, and will report to you later how it comes up. If we sent you poor seed I will try to make good all you are out of pocket in the transaction. I do not see how there can be any mistake, because we bought 50 lbs. in one lot last fall. We sowed some of it then and some more of it in February in the greenhouse, and it is certainly all right with us
A. I. ROOT.

Permit me to say in regard to the above, that I am not in the habit of *promising* to make good the consequences of poor seed. Any seedsman, or, in fact, almost anybody else who considers this matter, will see how impossible such a course would be. But friend Gressman's letter has the impress of truth on it. The circumstances are peculiar. He tried to do a neighbor a favor, and got into trouble. He promptly replied to my letter above as follows, giving still further particulars :

We sent to you for 16 lbs. of spinach seed in the first lot, but we found we were not going to have enough, and then sent for 8 lbs. later. We did not expect to receive that in time to sow with the first lot; but the weather did not become favorable until we had received the second lot, so we sowed about 4 lbs. of the first, and then could not sow again under four days; then we sowed the rest of the first seeds, and finished out our field with the second lot. It is all in one field, nearly square and level. The same fertilizers were used over the whole field. All was sowed by hand. Now, can you tell me the cause of the first lot not coming up, even that sowed the same day as the last lot of seeds? Neither of the first seeds sprouted, and the last lot of seeds was nearly up, and that lot is now coming up nicely. My neighbor's seeds were from the first lot, and sown the same day the last of mine were. His was not sprouted, but sown with a drill. We opened seeds, and they looked white, hard, and mealy, the same as slacked lime after it has baked and is broken apart. I will try to send you some of the seeds if I can get them. Mine were all sown, but my neighbor had some left, I think.

Water Valley, N. Y., Apr. 25. ELMER GRESSMAN.

It turns out, as you see, that the last 8 lbs. of seed was certainly unlike the first 16 lbs.; and this would indicate that of the two lots we bought last fall one was good and the other bad; but we felt sure we had tested both kinds, and both germinated all right. I find I wrote as follows:

Dear Sir:—Yours of April 25 makes it a little easier for us to get at the trouble. Last fall, when spinach seed was very scarce, we bought 25 lbs. of a man we have never bought spinach seed of before, and the sowing we made last fall we suppose came from this 25 pounds, but it is possible we made a mistake. Later we got another lot of California grown, of 50 lbs., and I think your last 8 lbs. must have come from this lot. I am very glad to know that at least one lot came up nicely. Will you please tell me if it is really a fact that none of the bad lot has come up at all? Is there not any part of the field or any part where it has come up partly? Also please send me some of the seed by mail if it is a possible thing. The strangest part of it is we have never had a complaint from anybody else, but we may get one later. It is remarkable to have spinach seed that won't grow at all, for it is very hardy, and ought to come up, even if it is several years old. And now, friend Gressman, I wish you and your neighbor would get together and figure out what your loss is by this bad spinach seed. I am afraid from the present outlook it will have to come out of my own pocket, for at present I could not take oath as to which of the two growers it came from. If somebody else reports bad seed, perhaps I can get at it, but I am the responsible party, any way, and I want it to be my loss instead of yours. Please tell me what I shall do to make both of you satisfied, and I will try to fix it up some way. It won't do for a seedsman to advertise that he will make good all blunders, because he might get imposed upon; but I know you are telling the straight truth about this whole unfortunate transaction. A. I. ROOT.

He replies to this last, sending us a sample of the bad seeds, which we planted at once in the greenhouse. Market-gardeners will readily understand that the above statement is by no means exaggerated. I have known not only the loss of one day, but the loss of only two or three hours, to make a difference of several dollars in the value of a crop. Sometimes somebody has borrowed our tools, may be without getting permission; and just when every thing is ready to plant, the seed-drill is gone. Sometimes we are interrupted by the weather, or, more perplexing still, by somebody's stupidity or half-heartedness. Nobody thinks of what the little trifle cost till we come to harvest the crop.

There is something very strange about the way things sometimes turn out. The man who is abreast of his work, and is ready to take advantage of a little spell of good weather or any thing else that comes along, makes a profit where his unfortunate neighbor makes a sad failure. Later, friend G. writes:

Sirs:—Yours of Apr. 27 is at hand. If you have not received the seeds I will send you more. Only a small percentage of them came—not half enough to warrant a stand. If half or even less came, we could have left it. I do not think over 10 per cent came. As to the damage, the price of seeds and extra trouble, I care nothing about. It is to get the first in market. We are a few days earlier than those near and around Buffalo in preparing the soil. We made extra calculations, and partly prepared the soil last fall in expectation of having an early crop. If it had been seeds of some other sort, where a few days does not make so much difference, it wouldn't have mattered any. That is why I was so disappointed, as spinach requires a very short time to grow. I should have tested those seeds; but as you have so many times stated in GLEANINGS that you tested your seeds and know what they are, etc., that is why we did not test them, having so much confidence in you, for you claim that has been the secret of your success in business, by gaining the confidence of the people. Now, this is no blunder of ours, but it is on your side of the house. It is really neglect and carelessness, and neglect in not living up to what you preach or advocate to the world, so it seems we ought not to be the losers; still, I have asked nothing, and do not know that I shall. It seems to me I can not feel satisfied to take any thing, because I believe it was not intentional on your part to get good money for a poor article. If such *was* the case I could have the heart to take all I could get.

I have written as I have because of what I read in GLEANINGS from time to time in reference to your seeds.

The damage could not be estimated until after marketing, so we could not make out a bill as you requested. I am going to leave the whole matter to you.

Water Valley, N. Y., May 3. ELMER GRESSMAN.

But please notice what a very kind and friendly letter this last one is. I should like to have such a man for a neighbor, even if he does bear down hard when things go wrong. He has never told me he is a Christian, but yet I think I see the spirit of Christ in his letters, even if he *did* go away on Sunday to get some good seed to help his neighbor out of trouble. If he is not offended when he sees his letters in print I hope he will tell me what he had to pay for the good spinach seed. The following is a copy of the last letter I wrote him:

Friend Gressman:—I thank you for your frank, outspoken letter in regard to that spinach seed. We did make a test of the seed when we first got it, or at least we supposed we did; but we are now forced to conclude the seeds we used for test came from another lot grown in California. This lot was all right, and was the same we sent you last. It was either as above or else the seed was good last fall, and deteriorated during the winter, which we can hardly believe. I am sorry you and your friend do not agree on what amount would make up for your loss. You see it is next to impossible for me to guess at what the amount ought to be. I will write the man who sold us the seeds, and see if I can get him to help me stand the damage; and when you market your crop I wish you would tell me how much you are probably out. It is my blunder—that is, so far as I can see now, I admit, and I will try to shoulder it. After this I will try to see with my own eyes to the testing of every lot of seeds we buy. We are sowing spinach every little while, in both fall and spring, and sometimes in winter, for we grow it in the greenhouse, and transplant it, so I felt sure when I said so that we had given the seed sent you a test. A. I. ROOT.

Now, several days after this letter had gone, something *else* unexpectedly turned up. When I sowed the seed I did not suppose it would come up at all; but after my last letter had been written, and after a little longer time than it usually takes spinach seed to germinate, one of the boys told me that the bad spinach seed was coming up all right *after all;* and then I felt satisfied we *did* test both lots of seed last fall, but did not notice that one was slower to germinate than the other. In fact, in our seed-tests we have not been in the habit of noting exactly how many days it takes seed to come up. We have noticed, however, that the old seed, as a rule, comes up slower. After it came up we took the bad seed and counted out three lots of 100 seeds each; but even during this warm May weather, with such a genial shower as we are having to-day (May 8) it would be nothing strange if the objectionable seed should behave very fairly, when the same kind of seed would not come up promptly, and a good percentage die, during the cool and comparatively unfavorable weather in April.

My good friend Gressman suggests something that I have been long considering. Have I really *any business* to undertake to sell seeds with all I have on my hands, especially since I am getting well along in years? But after I give it up, may not somebody else manage it *still more* poorly than I have done? I think you would, as a rule, have to pay higher prices than I have been charging you; but if you get better seeds, perhaps you had better pay higher prices; but if you pay the higher prices, do you get seed that is up to all the requirements we have been considering in the above transaction? I have traded more or less with the large seedsmen of the United States, and I do not know of one whose seed is *always* exactly what it ought to be in *every* respect. Before the seed is offered for sale it is invariably tested by all of our great seedsmen. They are *sure* it germinates — perhaps a good fair proportion of it, but it is not always new seed of the last season's growth. Friend Black and others have told us that they do not dare risk celery seed and lettuce seed that was not tested the season before. Two-year-old seed is the only thing they *dare* use. My impression is that spinach ought to be grown the season before. Well, the seedsman can make sure the seeds will *germinate* promptly, and a goodly percentage of them. But this is not all. I once sold a man 20 cents' worth of celery seed that had been tested in our greenhouse. It was all right in regard to germinating, but it produced red celery instead of Giant Pascal. If I remember correctly I paid him about $10.00 damages for that one twenty-cent deal; but if I am expected to do business that way right along, I should very soon go out of the seed business. You may say it served me right for purchasing seed of an unreliable party. But, hold on, friends. The celery seed was purchased of a well-known and reliable seedsman. Just before the concern became bankrupt, they sent out poor seeds for the first time. In spite of any thing that we can do, old reliable firms every now and then become bankrupt, and we must get along with the consequences as best we can. Where both parties in all these transactions have the spirit of Christ Jesus in their hearts, the spirit of fairness, of peace and good will toward their neighbors, as in the language of our texts, it is a very easy matter to settle differences. And this spirit of peace and good will is contagious. Thank God that it is so. Our friend says in his letter, "It seems to me I can not feel satisfied to take any thing, because I believe it was not intentional." Then he adds something I do not like quite so well: "If such *was* the case, I could have the heart to take all I could get." Dear friend G., the Savior admonishes us to love our enemies—to do good to those who hate us. He did not just exactly say we should do a kindness to a man who has deliberately *cheated* us; but I think it includes that, at least in a measure. He did admonish us in another verse not to cast our pearls before swine — that is, we must not become reckless or foolish. We should study carefully the person we are dealing with; but if we make any error, dear friends, I am very sure it is best to err on the side of charity.

Better do a bad man a kindness, even if it should be like casting pearls before swine, than to conclude hastily that somebody who means to do right has been trying to cheat you.

One more thing: The hard-working market-gardeners or bee-keepers are, as a rule, fair and honorable men. The man who never works if he can help it — the tramp, the frequenter of saloons — are the fellows who have no scruple and no conscience. They have no scruple about lying and cheating whenever a chance offers; but the man who gets up early in the morning, and works all day, in all kinds of weather, is, as a rule, one of God's noblemen. Sturdy toil seems to develop manliness and good sound common sense. Oh how I do love to meet *manly* men—those who are never afraid to have their acts or lives held up for investigation—those who *prefer* to earn their bread by the sweat of their faces!

Now for the golden rule. Friend Gressman and his neighbor got some poor seed because I was trying to find out where I could get seed at a price that would not necessitate advancing prices in the catalog—yes, and I did get it too. The California-grown seed is as nice as any I ever planted; but before I got that it seems I got hold of something that was not so good. Now, the golden rule would settle every thing in regard to what is right in such a matter, no matter if the market-gardener is poor and the seedsman rich; in fact, the seedsman who is well-to-do can all the *better* afford to do exactly as he would be done by; and if both parties seem willing to shoulder their part of the loss, then the market gardener should ask no more than he would be willing to pay if things were changed about, with the seedsman whose seed caused a failure of the crop. It is a pretty hard stretch on the average man to expect him to do exactly unto others as he would that others should do to him under like circumstances. But there *are* men who do it—yes, thank God, there are thousands of them, and they do *not* get into the poorhouse by so doing, either. Did not *Jesus* say,

> Give, and it shall be given unto you; good measure, pressed down, and shaken together, and running over, shall men give into your bosom?—LUKE 6:38.

HIGH PRESSURE GARDENING

BY A. I. ROOT.

BENEFITS OF SHADE.

There are times, during the extremely hot months of the year, when shade in the middle of the day is, without doubt, a benefit. Of course, we can not shade ordinary farm crops —that is, not in the same way we would provide shade for plant-beds or for limited areas where the crop is very valuable. For two seasons we have lost our Columbus gooseberries because they were literally cooked or baked by the hot sun at just about the time they were ripening. A baked apple is a very good thing; but a baked gooseberry—that is, one baked by the sun before it is fully ripe—is not particularly "to be desired." While in Florida I studied the shaded gardens round among the tall palm and palmetto trees; and since so much interest has been manifested in ginseng, our people here in the North are making their beds out in the woods; but to do this we must make a trench clear around our plant-beds, every year cutting off the roots of the forest-trees that intrude. If you try growing garden stuff by making the ground very rich near any fair-sized tree, you will soon find that trees of any kind know "a good thing" when they find it. A market-gardener who realized the advantage of shade for celery-plants (just as we do) made his bed in the shade of some early cherries. The trees had never amounted to very much before; but with the rich soil and constant watering he not only had an enormous crop of cherries, but the cherries themselves were enormous. Lots of water and rich potting soil will make any fruit-trees do wonders. You may remember I mentioned about my neighbor Mr. Green, who had a mulberry-tree standing close to a little fountain in the midst of a flower-bed. The mulberries were so large I wanted a graft from that tree, and the tree kept growing berries right straight along during the whole summer season. He put in good drainage for the overflow of his fountain, and the ground was kept pretty well soaked all summer long. But it is expensive business to keep up both water and fertility. May be, with the cherry-trees it would pay, and they would give you just the right kind of shade. The above is to remind you of what you may expect if you use *growing trees* for shade.

Friend Slack, in criticising my flat-roof greenhouse, hinted at the effect of the hot sun, not only in June and July, but even earlier. Well, this season, even when we were having a severe frost every night, the sun was so hot in the middle of the day that it just scorched and roasted things. I began to wonder why I could not grow plants during the latter part of April as successfully as I did in December and January. Well, I decided that it was largely owing to the fierce sun at noonday. After I made some cloth curtains to roll up, supported on rods just below the glass, there was a marked improvement. It is some work to roll up and unroll six curtains once and sometimes twice every day; but it just makes the "posies" smile, and the tomato-plants and cabbage-plants also. For instance, when you take a lot of plants out of the seed-bed and put them into a larger bed in the greenhouse, the sun must be kept off until they have got started enough to stand alone. A curtain comes in very nicely, and especially where we have six curtains, for then we can shade any particular bed or half a bed, letting the sun shine on all the others. Some plants will stand the sun—colei for instance—when they get well rooted; but others, like the begonia, will show scorched leaves around the edges, and finally die outright if you do not give them a shady place in the middle of the day. Just group your plants together that are to be grown in the shade, then you can manage nicely.*

In the open air we have been in the habit of shading plants with cotton cloth; but sometimes you want a shade when you do *not* want a confined atmosphere. And then, again, suppose a summer shower comes up, and you are not just on the spot. Your cotton cloth should be out of the way as soon as the first raindrop falls; and if the sun comes out again, with fierce heat, in a short time you will want your cloth rolled back. In order to avoid so much manipulation, the people who grow ginseng have a slatted roof over the beds, such as I told you about, that are in use in Florida and California, where they not only cover an acre, but gardens of many acres, with a slatted roof. This same slatted roof protects orange-groves from the frost. Well, for small gardeners the ginseng book describes and recommends a lath screen. Take common plasterer's lath, placed an inch apart, then nail a lath across the ends; and in order to make the thing stiff and substantial, put a third lath through the middle. Weave this middle lath in and out, basket fashion. The ginseng book recommends beds 4 feet wide; but as the standard width for market-gardening is 6 feet, I would have these slatted shutters made the whole dimensions as our hot-bed sash—6 feet long by 3⅓ feet wide. Then they can be used interchangeably. Nail your laths together with nails that will clinch; and to make them more substantial, sometimes a brace is put on diagonally. These slatted frames will let enough rain through to answer almost as well as if they were off entirely; and they never need to be taken off the plants unless you want to gather a crop or work among the plants. The author of the book on ginseng culture, Morris C. Kains, who has furnished bulletins for the United States Department of Agriculture, gives us a short talk on the subject in the *Mayflower* for May. We copy it below:

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* These cloth curtains just under the glass are also a great protection against frost, and I think they might be so managed as to save a large amount of fuel in severe weather. We had a spell of weather in April when we found it profitable to cut off the sun along in the middle of the day. About three o'clock the curtains could be rolled back so as to give the plants sunshine until daylight disappeared, then the same curtains were unrolled again to keep the temperature of the greenhouse from going too low during the night. As soon as the sun began to peep through the glass next morning they were rolled up until the rays began to be too strong, and so on. This is some work; but is it not less work than to fire up and warm with hot water or steam-pipes? If you whitewash the glass you can't have the sun during cool weather and cloudy days, oftentimes when it is *very much* needed.

SHADING MIDSUMMER LETTUCE.

In this climate it is seldom that the gardener can raise lettuce during the summer months without the development of a marked bitter flavor, and without great risk of loss from the plants going to seed. The cos varieties are less liable to these faults, and it is, therefore, somewhat singular that they have not come into more general use, particularly since they are naturally of finer flavor and texture. It has been found, however, that growing the plants under lath screens during the hot months has a marked influence for good upon flavor and texture. Grown in this way, the ordinary good market varieties compare very favorably with the crops raised at more congenial seasons.

The best screens are made of laths nailed at their ends to single strips, and made firm by weaving a lath across the middle. Spaces an inch or so wide are left between the laths so as not to exclude the sun's rays wholly. These screens, which are made in four-foot sections, are placed upon posts over the beds as soon as the seed is sown, and, if exposed to the action of severe winds, are tied or wired down. In even the most unfavorable seasons the seed will germinate far better than in the open ground, and superior lettuce can be grown under them when the plants unshaded will be a total failure. The same remarks may be made as to the cultivation of spinach and Swiss chard.

SCABBY POTATOES—HOW SHALL WE GET RID OF THEM?

In view of the fact that scab may knock off half the value of a crop of potatoes, it is exceedingly important that we know how best to avoid it. Treating the seed with corrosive sublimate is a perfect cure so far as my experience goes—that is, with the seed. Formalin may answer as well, but it has not with us; but we have tried it only once—last season. My impression is, that scabby potatoes are just as good to plant as any if treated with corrosive sublimate; but if your ground has produced scabby potatoes in former years, you are likely to have them so again, no matter what seed you use, unless you use some precaution. At the present writing, plowing under green crops, especially rye, is the best remedy I know of. From a recent number of the *Rural New-Yorker* I extract the following:

THE SCAB ON POTATOES; CURIOUS AND CONFLICTING RESULTS; WAS IT THE LIME?

Two pieces of ground were planted with potatoes last season, both of which had been previously used for growing onions. One of these pieces had been somewhat heavily manured with stable manure annually for the last five years, growing a crop of onions every year. The other had grown two crops of onions, and, previous to the first crop, had grown a crop of cabbage, at which time a light dressing of stable manure was applied, and also a coat of lime. The two crops of onions following this crop of cabbage had been grown by the aid of fertilizers alone. Last spring those two pieces were planted with the same variety of potatoes, New Queen, from Aroostook County, Me. The soil was perfectly free from scab, but at digging time the discovery was soon made that on the piece manured with stable manure for five consecutive years the tubers had no trace of scab while the other piece, with only one light dressing in that time, had scarcely a bushel of good potatoes, free from scab, in the whole field. The seed and soil were the same in both cases; in fact, there was only a 12-foot driveway between the two fields. How are we to account for the great difference in results, if, as generally supposed, stable manure is such a great promoter of scab? I present the facts as they are, in the hope that abler minds than mine may solve the problem. I will only add that the manure used was the same in both cases, having been got from the same source. My own conviction is, however, that the dressing of lime applied in the rotation had probably neutralized the acid conditions of soil to such an extent that the development of such germs became a possibility; for it appears to be an established fact, in the minds of those best informed on such matters, that an acid condition of soil is fatal to the scab germs.

A GREEN CROP HELPS.

I have in a small way experimented with green crops plowed under while still green, and, as far as I have gone, it seems highly encouraging, inasmuch as the litmus test shows decided acid conditions. We think a crop of 300 bushels, once in two years, more profitable than half that quantity every year. The area of available soil being somewhat limited, we sow a potato-field with rye as soon as the crop is removed, say during the month of August. The following spring, the latter part of May, after planting is done, this crop is turned under and cow peas sown, two bushels per acre, with sufficient fertilizer applied to grow a crop of potatoes. The variety of cow peas sown is the Wonderful. I have wondered why it is that the people at Hope Farm prefer the Black, when the Wonderful makes so much more growth to turn under. Just before the frost cuts the vines, the whole crop is turned under with an Oliver Chilled No. 70, and a rolling coulter and chain. Rye is sown at this time, and turned under the following spring for potatoes. As I have already stated, the experiment, as far as I have gone, promises to be highly successful in more respects than one. An immense supply of humus being formed in the soil that last season, enabled us to harvest a fine crop without a soaking rain from start to finish. Another season I shall be able to speak more positively regarding the matter. The sulphur cure has been a disappointment with me.

M. GARRAHAN.

The above indicates that stable manure is not necessarily productive of scab, provided plenty of green rye is plowed under; and it indicates, too, that lime is almost sure to encourage the production of scab. From what experience I have had I am inclined to think that ashes act very much as lime does. Our wood-working rooms now furnish almost fuel enough to run our boilers. The result is, we have toward a ton a month of wood ashes to be applied to fifteen or twenty acres. I am afraid to use them all, even if applied to clover, to be followed by potatoes.

Can anybody who sees this tell us more about it—that is, whether ashes applied to clover would produce scabby potatoes? Perhaps if we plow under as much rye as Mr. Garrahan does it might be all right.

CIGARETTES AND THE WEATHER BUREAU.

You may be sure that I said right out loud, "May God be praised!" when I found the following in our Cleveland daily a few days ago:

MUST NOT SMOKE CIGARETTES.

AN ORDER TO MEN IN THE U. S. WEATHER SERVICE.

AN ORDER ISSUED BY THE CHIEF WHICH, HE SAYS, MUST BE OBEYED.

Washington, March 25.—A death-blow was given cigarette-smoking in the weather service Saturday when Chief Willis L. Moore issued an order prohibiting persons connected with the service from smoking cigarettes during office hours, and stating, further, that those who smoked cigarettes at any time would be mentioned in the confidential reports, which are made quarterly to him by chiefs of the several offices and divisions throughout the entire service.

The order is plainly worded, and the chief evidently means that it shall be obeyed.

Chief Moore said to day: "The order was issued after careful consideration and a thorough investigation of the evils resulting from cigarette-smoking. In this service we are compelled to maintain a very strict discipline in order to secure satisfactory service. Some of our men who are regarded as the most thorough and competent, doing every detail of their work with the utmost promptness and accuracy, gradually became careless and lax. I sent inspectors to investigate, and in a number of cases it was found directly attributable to the use of cigarettes. I am not prudish, nor do I wish to assume any authority whatever over any privileges which employes of the service should have, but as a public servant I feel that it is my duty to correct any evil which may exist, even if in attempting to do so it may be claimed that I am overstepping my authority. I can state most emphatically that the order will stand, and it applies to the entire force of the bureau throughout the entire service. Cigarette-smoking must cease.

Willis L. Moore has always seemed to me to be a very level-headed sort of man. He has backed me up most substantially in showing up the quack weather-prophets; and when I found he was with me on cigarettes it seemed as if a glimpse of sunshine was coming along through our government work, especially through the Weather Bureau, if no further. And, by the way, there is something a little funny in regard to ruling out cigarettes. The chief of the Weather Bureau has found out that the men who smoke cigarettes deteriorate rapidly (how about letting immature boys use the same things?). Well, a while ago, when I protested because the government put out a bulletin telling our people how to grow tobacco, and even make cigarettes, a government official answered me to the effect that it was better to give the boys pure tobacco, if they would have it, than any substitute or adulterated stuff. But when I submitted the matter to United States Chemist Wiley, he was frank enough to declare he did not *know* any *worse drug* for either children or grown-up people than nicotine itself; and then some other chemists in our big cities (employed by tobacco-dealers, no doubt) declared, after having analyzed cigarettes found in the general market, there was no opium nor any drug of any kind in the cigarettes except tobacco. If this is true, why has the chief of the Weather Bureau made the above decision? There is something ricketty or loose somewhere. But we can rejoice *any way* that cigarettes are for the present ruled out among those in the employ of the Weather Bureau of the United States.

PROF. WELTMER, OF NEVADA, MO.

If I am correct, GLEANINGS was one of the first to pronounce this man and his whole force, with all his outfit, as simply "robbers of sick people." When some of the Christian papers followed suit and exposed him, he sued them for $20,000, and gained the suit. The town of Nevada backed him up, because, as they said, he had built up the town more than any other business enterprise that was ever started in that vicinity. I sent for his circulars, as you may remember, and also procured terms for instruction in the art of divine healing. These I forwarded at once to the Postoffice Department at Washington, asking why such a business should be permitted to use the mails. As I heard nothing further from it I began to fear the "healing" business was getting to be so thoroughly intrenched with the piles of money they were making, that they were something like the liquor-trust; but, may the Lord be praised, there is a limit to this kind of rascality. The following, from the Chicago *Daily News* of May 5, tells us about it.

BAN ON DIVINE HEALERS; POSTOFFICE TO ISSUE ORDER DEBARRING THEM FROM USING THE MAILS.

New York, May 5.—A special to the *World* from Washington says that divine healers have come under the ban of the postoffice department, and in a few days an order will be issued debarring them from the use of the mails. The department has been gathering information respecting their methods for a month, and it is now so well conceded that their business is illegitimate that it is the purpose to institute a general raid.

The matter was first brought to the attention of the department by complaints from Nevada, Mo. where Weltmer, a so-called divine healer, conducting his business by mail, endeavored to collect payment for continuing to treat a patient after the patient was dead. Further investigation showed that he had attempted this in several instances. although, of course, he was not aware that the subject of his "absent treatment" had succumbed to disease.

Prof. S. A. Weltmer is president of the American School of Magnetic Healing, which is located at Nevada, Mo., and organized under the laws of that State. He claims to have treated 53,000 patients without personal consultation, and to have cured all but twelve.

The postal authorities have notified the officials of the Nevada school to appear on May 12 and submit arguments to show why a fraud order should not be issued against them.

Nevada, Mo., May 5.—Postmaster McAulty is in receipt of a telegram from the postal authorities directing him to hold all mail addressed to the Weltmer institute. As a result the American School of Magnetic Healing has laid off all its employees, and will do nothing further until the United States courts dispose of the fraud charges against the managers

The Weltmer-Bishop trial, wherein Prof. Weltmer sued a Methodist minister for $20,000 damages for making charges against the school, is said to have led to the department's investigation of the school's methods.

Let me say, in reviewing the above, that numbers of good honest people—yes, good Christian women—insisted that Weltmer was honest, and did a good work. One person put in a plea for him on the ground that Jesus himself said that his followers should do even greater things than he had done while here on earth; but if Weltmer is to be called a follower of Christ Jesus, may God help us. It never occurred to me, when I was denouncing the absent treatment, to assure people the doctor would keep right on after his patient was dead, for he would have to be a prophet indeed to know when said patient was gone, a thousand miles away. And now it turns out that he not only kept on the treatment, but tried to collect payment from a dead patient! And this lets out another fact: The absent healers do not *always* stick to their rule, "strictly cash in advance."

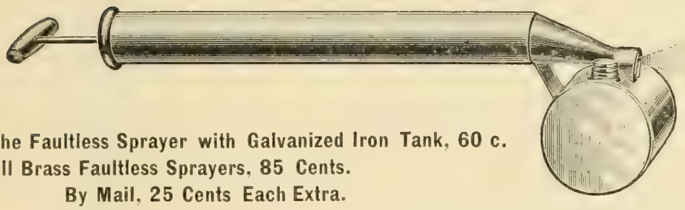
IN THE LAKE COUNTRY

of Northern Illinois, Wisconsin, Minnesota, and Michigan, there are hundreds of the most charming summer resorts awaiting the arrival of thousands of tourists from the South and East.

Among the list of nearby places are Fox Lake, Delavan, Lauderdale, Waukesha, Oconomowoc, Palmyra, The Dells at Kilbourn, Elkhart and Madison, while a little further off are Minocqua, Star Lake, Frontenac, White Bear, Minnetonka, and Marquette, on Lake Superior.

For pamphlet of "Summer Homes for 1900," or for copy of our handsomely illustrated Summer-book, entitled "In the Lake Country," apply to nearest ticket agent or address, with four cents in postage, GEO. H. HEAFFORD, General Passenger Agent, Old Colony Building, Chicago, Ill.

THE FAULTLESS SPRAYER.



The Faultless Sprayer with Galvanized Iron Tank, 60 c.
All Brass Faultless Sprayers, 85 Cents.
By Mail, 25 Cents Each Extra.

Few little inventions make the stir and do the amount of good that the little tin spray-pumps did that were introduced in 1898. Although we have a machine for spraying potatoes, that cost $25.00, we let it stand in the tool-house, and sprayed a great many acres of potatoes with a little spray-pump similar to the one pictured here. It did the work easier and cheaper and better. A boy with some packages of Paris green (a large spoonful in each paper) in his pocket, and in his hand a spray-pump weighing only about a pound, will do the whole job in a very little time; in fact, one boy takes his hoe along and does the hoeing and spraying both, without any machine to lug back and forth, nor any chance of said machine getting out of order. As soon as we began to offer them for sale others seemed to discover their advantages; and although we ordered pumps from the factory at several different times, we were sold out in spite of us when we wanted them most. We sold over 1700 during 1899.

We now have a tremendously big stock of the latest improved ones, and the price is even lower. These pumps are so perfect that the spray looks like steam out of the nose of a teakettle; in fact, you can fill the air in a room with vapor with one of these machines. The price of the new improved machines with galvanized iron tank is only 60 cts. You can have the same thing made all of brass for only 25 cents more. Either kind can be mailed for 25 cts. additional. Now do not say you can not afford a sprayer to keep the potato-bugs out of sight, for the great advantage of this little apparatus is that it is so little work to use it you can kill the bugs when they first start, and keep them down before your potatoes are injured at all. Thousands of people lost their potatoes last season just because it was too much work to fight the bugs.

With every machine is a stout linen tag, with full directions how to use the sprayer for all kinds of insects. Yes, this machine will answer for fruit-trees all right, but you would have to get up on a high stool, or climb a ladder, to get the spray all over a tree of any size. For spraying orchards a larger and more expensive machine is needed. For keeping flies off horses and cattle use pure kerosene in the above sprayer.

CLIMAX POULTRY-NETTING AND SHEEP AND HOG-FENCING.

The demand for fence netting, or fabric made from wire, for the purpose of restraining domestic animals and fowls, has grown to vast proportions, and, like every thing else, the mode of manufacturing the same has undergone important changes. It is a fact that frequently ordinary steel wire is heated in the process of manufacture, and, when finished, is soft, and possesses a low degree of tensile strength and elasticity. Although wire of this kind is more easily manipulated in manufacturing, it is also true that the netting is more easily bent out of shape. All wire used in the "Climax" netting is manufactured by a patent process described as "cold drawn." steel wire. By this process the wire is not heated to a point that will detract in the least from the tensile strength, and, when woven, forms a fabric capable of withstanding a much greater strain than other brands of netting made from No. 19 wire or heavier. "Climax" poultry-netting therefore possesses an exclusive advantage, in point of the superiority of its wire, over all others.

Another notable feature of the "Climax" netting is the *long twist* in the meshes. With a long twist the wires are laid side by side for a greater distance, thereby making it much more rigid and strong. The meshes are uniform, and three-strand selvages contribute to the strength where usually required most.

"Climax" Poultry-Netting.

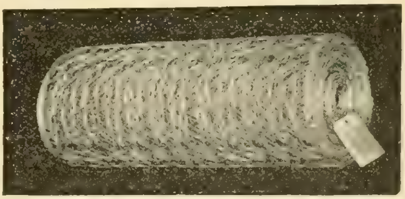
Because the selvages are perfectly uniform in length and also equal in body, "Climax" poultry-netting will roll out flat and straight, and smooth as a carpet or oil-cloth. For this reason it can easily be fastened to posts without hard stretching. It will, when put on, remain flat and straight, and therefore be free from unsightly appearance that marks a netting that bulges in the fabric.

PRICE OF 2-INCH MESH "CLIMAX" POULTRY-NETTING.

12	inches wide,	per	roll of	150	running feet,	$ 90
18	"	"	"	"		1 35
24	"	"	"	"		1 80
30	"	"	"	"		2 25
36	"	"	"	"		2 70
48	"	"	"	"		3 60
60	"	"	"	"		4 50
72	"	"	"	"		5 40

Staples for the above, ¾ and 1 inch, 8c per lb.

Five per cent off on 5 rolls; 10 per cent off on 10 rolls or more. Prices F. O. B. cars Medina, New York, or Chicago, whichever point is nearest or most convenient to you.



150-FOOT BALE OF "CLIMAX" NETTING READY FOR SHIPMENT.

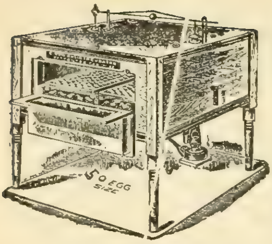
"Climax" Sheep and Hog Fencing.

THREE-STRAND TWISTED SELVAGES. SOLD ONLY IN FULL BALES, 20 RODS (330 FEET) LONG.

The "Climax" meets the demand for a strong and durable fencing for sheep and hogs. Each strand of wire is capable of sustaining a strain of at least 300 pounds, thus being amply strong for any ordinary requirements. The meshes are small enough (3x4 in. instead of 3x6 in. formerly), to stop small animals, while the shape of the mesh affords sufficient rigidity to the fabric to prevent sagging between the posts; also animals can not bend the fencing to crawl under. Being galvanized after weaving, the coating will withstand the action of the atmosphere for at least 25 years. In addition, the wires are soldered where twisted, which unites them and combines the strength of all. It is the best material ever offered for the purpose at as low a price.

23 inches (7½ meshes) wide, per roll 20 rods, $ 6.00
50 inches (16 meshes) wide, per roll 20 rods, 11.25
F. O. B. cars Chicago or New York.

THE A. I. ROOT CO., Medina, Ohio.



A PERFECT INCUBATOR

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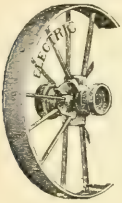

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Unless a wagon has good wheels it is useless. **THE ELECTRIC STEEL WHEELS** are good wheels and they make a wagon last indefinitely. They are made high or low, any width of tire, to fit any skein. **They can't get loose, rot or break down. They last always.** Catalog free.

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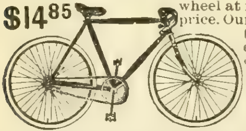
Shipped direct to anyone and guaranteed as represented or money refunded. Save agents large profits and get a wheel at rock bottom wholesale price. Our **Arlington Model K** is the greatest bargain ever offered; in lots of one or more at $14.85



$35 "Arlington" $16.50
$40 " $18.50
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the Arlington & Oakwood are strictly high grade and the best that can be made. Thoroughly tested and fully guaranteed. Over 100.000 riders can testify to their superior quality, style, construction and workmanship. Illustrated catalog free. **CASH BUYERS' UNION, 162 W. Van Buren St., B-345, Chicago, Ills.**

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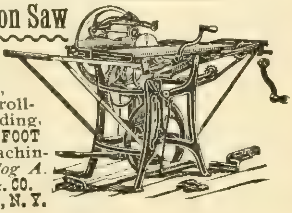

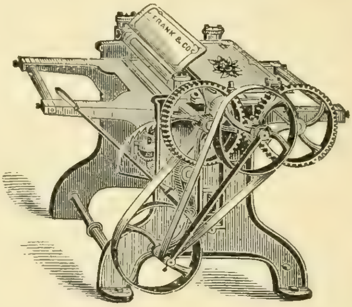

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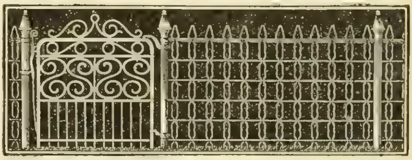

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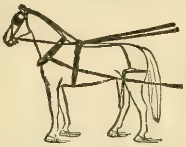

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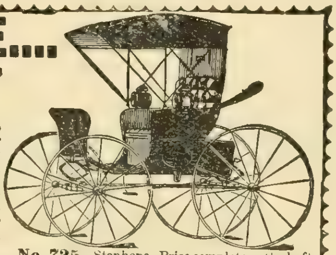

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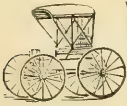

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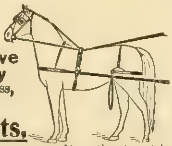
on a vehicle, harness, fly net or saddle?



Because we have no agents.

Can we really do it? **We say yes. Can we prove it** without cost to you? We can. **How?** We will ship you a harness, saddle, or vehicle, without you sending a single cent, and let you look it over at your freight house and if you don't find we have given you the **biggest bargain** you ever saw or heard of, return the goods to us at our expense. **We give with each vehicle a 2-year iron-clad guarantee,** protecting you from poor material and workmanship. Our vehicle catalogue describes the largest line of **buggies, road wagons, phaetons surries, spring wagons and carts, harness fly nets and saddles** ever shown in one book. **It's free. Send for it.**

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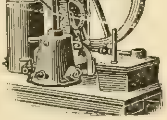

3-4 and 1 H. P. For Separators, Churns, etc., Stationary to 20 H. P. Pumping Engines all sizes. Send for circulars stating size and for what use.

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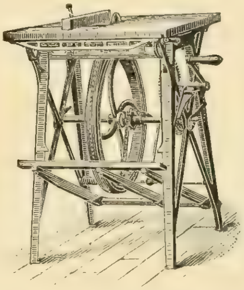
Barred and White Plymouth Rocks, Light Brahmas, single-comb White, Brown, and Buff Leghorns; rose-comb Brown Leghorns; Silver-laced and White Wyandotts, Partridge Cochins, Single and Rose Comb Black Minorcas, S. S. Hamburgs, and Pekin Ducks. Eggs, $1.00 for 15. Circulars and recommendations free.

Chas. H. Rue, Minerva, Ohio.



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Hand and Foot Power
Machinery.

This cut represents our combined circular saw, which is made for bee-keepers' use in the construction of their hives, sections, boxes, etc. ***Machines on trial.*** Send for illustrated catalogue and prices.

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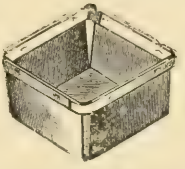

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Order your supplies now before the busy season catches you. Price list free. Address

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IF YOU NEED QUEENS

We can fill your orders by return mail. To use the words of our customers, with the "largest and finest queens you ever saw." These queens are not only fine looking, but are very prolific, and their bees are the best of honey-gatherers; that means strong colonies and full supers. Now, to prove that this is not all talk, send for our price list of Italian queens, and give us a trial order.

The choicest of tested queens, $1.00 each.
Untested, 75 cts. each ; $8.00 per doz.

Safe arrival and satisfaction guaranteed on every order.

J. W. K. SHAW & CO.,
Loreauville, - Louisiana.

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RAILROAD,
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KENTUCKY, TENNESSEE,
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WHERE

Farmers, Fruit-growers,
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will find the greatest chances in the United States to make "big money" by reason of the abundance and cheapness of

Land and Farms,
Timber and Stone,
Iron and Coal,
Labor--Everything!

Free sites, financial assistance, and freedom from taxation, for the manufacturer.

Land and farms at $1 00 per acre and upwards, and 500,000 acres in West Florida that can be taken gratis under U. S. homestead laws.

Stockraising in the Gulf Coast District will make enormous profits.

Half-fare excursions the first and third Tuesdays of each month.

Let us know what you want, and we will tell you how to get it—but don't delay, as the country is filling up rapidly.

Printed matter, maps, and all information free.

Address **R. J. WEMYSS,**
Gen'l Immigration and Industrial Ag't,
LOUISVILLE, KY.

In writing, mention Gleanings.

Our Bees are Busy

now carrying loads and loads of pollen and sweets from the flowers to raise the thousands of new bees for the coming honey crops. We are busy with the orders for Hives, Sections, Foundation, Comb to enable the bees to spread themselves over a surface for rapid work.

Many implements and fixtures to help the people to handle the bees conveniently and with profit.

Drop us a postal card and we will send a catalog of the best and latest Bee hives, etc.; contains also instructions for successful managing of bees for profit.

: : ROOT'S : :
ABC OF BEE CULTURE

If interested in buying groceries, ask for our wholesale list, and it will also be mailed.

We have sold several carloads of Root's hives and supplies, and can make you the best prices for quantity ordered besides a saving of freight in points adjacent to Evansville.

ADDRESS
Vickery Bros., Evansville, Ind.
WHOLESAAE GROCERS.

DITTMER'S FOUNDATION!
AT WHOLESALE AND RETAIL.

This foundation is made by an absolutely non-dipping process, thereby producing a perfectly clear and pliable foundation that retains the odor and color of beeswax, and is free from dirt. Working wax into foundation for cash, a specialty. Beeswax wanted. A full line of supplies at the very lowest prices, and in any quantity. Best quality and prompt shipment. Send for large illustrated catalog.

GUS DITTMER, : : : AUGUSTA, WIS.

WESTERN BEE-KEEPERS

will save money and freights by buying supplies from

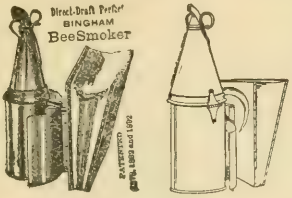
BARTELDES & CO., Denver, Colo.

20-page illustrated price list now ready.

Root's Goods in Kansas.

Carl F. Buck, Augusta, Butler County, Kansas.

D. COOLEY,
Dealer in **BEE-KEEPERS' SUPPLIES,**
KENDALL, MICH.
Root's Goods at Root's Prices. Catalog free.



BINGHAM SMOKER.

DEAR SIR: Inclosed find $1.75. Please send one brass Smoke engine I have one already. It is the best smoker I ever used. Truly yours,
HENRY SCHMIDT, Hutto, Tex.

MADE TO ORDER.

Bingham Brass Smokers

Made of sheet brass, which does not rust or burn out; should last a lifetime. You need one, but they cost 25 cts. more than tin of the same size. The little open cut shows our brass hinge put on the three larger sizes. No wonder Bingham's 4-inch smoke-engine goes without puffing, and does not drop inky drops. The perforated steel fire-grate has 381 holes to air the fuel and support the fire.

Heavy tin smoke engine, 4-inch stove per mail, $1.50; 3½-inch, $1.10; 3-inch, $1.00; 2½ inch, 90c; 2-inch, 65c. Bingham smokers are the originals, and have all the improvements, and have been the standard of excellence for 22 years. Only three larger ones brass.

T. F. Bingham, : : Farwell, Mich.

1881 **PAGE & LYON MFG. CO.** 1900

We manufacture a full line of the latest BEE-SUPPLIES.

Our motto is, "Perfect Goods and Prompt Shipment."

Send for our new free illustrated catalog.

PAGE & LYON MFG. CO., New London, Wisconsin.

Marshfield Manufacturing Company.

Our specialty is making SECTIONS, and they are the best in the market. Wisconsin basswood is the right kind for them. We have a full line of **BEE-SUPPLIES.** Write for free illustrated catalog and price list.

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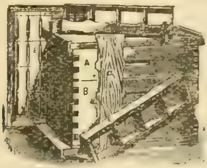
NOW READY!

64-page Catalog of Every Thing Bee-keepers Need.

Illustrated and fully described. Especially valuable to beginners for the information it contains Send your address on a postal and get it NOW. Established 1884.

J. M. Jenkins, Wetumpka, Alabama.



HONEY MONEY results from the best care of the bees. That results from the use of the best Apiary appliances. **THE DOVE-TAILED HIVE** shown here is one of special merit. Equipped with **Super Brood chamber, section holder, scalloped wood separator** and **flat cover.** We make and carry in stock a full line of **bee supplies.** Can supply every want Illustrated catalogue **FREE**

INTERSTATE MANFG. CO., Box 12, HUDSON, WIS.

1200 FERRETS FOR SALE. Small, medium, and large sized; some trained. **First-class** stock. New price list free

N. A. KNAPP,
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California Queens... Of pure Italian stock. Yards exclusively for queen-rearing. Ten miles from any other bees. Untested, 90c; twelve for $9.00. Write for price list.

H. L. WEEMS, HANFORD, CALIF.

FOR SALE. Good ranch for bees and general farming, 15 miles north of San Diego, California.

G. C. GEARN,
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For Sale Cheap. Thirty 1-story Root chaff hives complete, for extracted honey, with empty combs; 20 nucleus hives, 3-frame; 25 supers for comb honey; no disease; in good repair.

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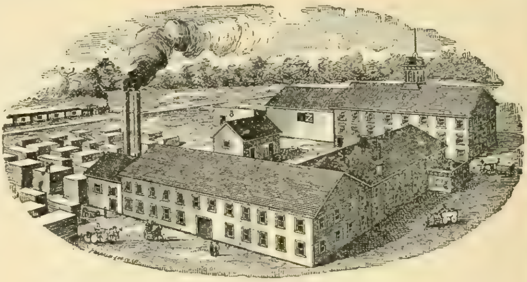
BEE-SUPPLIES!

We have the best-equipped factory in the West. Capacity, one carload a day; and carry the largest stock and greatest variety of every thing needed in the apiary, assuring BEST goods at the LOWEST prices, and prompt shipment. We want every bee-keeper to have our FREE ILLUSTRATED CATALOG, and read description of Alternating Hives, Ferguson Supers, etc. *Write at once for a catalog.*

We also manufacture TANKS of either wood or galvanized steel, all sizes, any form, and for all purposes. Price list free.



KRETCHMER MFG. CO., Red Oak, Iowa.

Swarming

has commenced. Have you enough hives, sections, foundation, etc., ready for the swarms and surplus. We can supply you promptly. Our catalog describes what a practical bee-keeper needs, and it is free. **Veils,** none better, 35c postpaid; silk-faced. If not satisfactory, return and get your money. **Queens,** untested Italians, 70c. Tested Italian queens, $1.00.

I. J. Stringham, = 105 Park Place, = New York.

Apiaries at Glen Cove, Long Island.

Don't Buy Supplies

Until you see my 40th annual catalog. A full line of hives and fixtures best adapted to our New England climate. Also best brands of **Comb Foundation and Section-boxes.** I have also made arrangements to keep quite a general stock of

A. I. Root Co.'s Goods at Their Prices.

Parties desiring these goods can get them of me, and **Save Freight Charges.** Bees, Queens, and Nucleus Colonies from the **very best strains** in America. A 40-page illustrated catalog free. Address

W. W. Cary,
Lyonsville, Mass.

$10.00 REWARD

To the party who sends me the most money for bees and queens between April 1 and Nov. 1, 1900. My 1900 untested queens ready to go

BY RETURN MAIL.

High-grade stock and not cut prices, my specialty.

1 untested queen, $1.00; 6 for $5.00; 12 for $9.00.
1 tested queen, $1.50; 6 for $8.00; 12 for $15.00.
Breeders, very best, $3.00 to $5.00.

Nuclei ready April 15. I have special express rates on bees.

One 1-frame nucleus, no queen, $1.00; 6 for $5.50; 12 for $10.00.
One 1-frame nucleus and queen, $1.75; 6 for $9.00; 12 for $17.00.
1, 2, 3, and 4 frame nuclei, 65c per frame to above prices for extra frames wanted.

For each dozen queens or nuclei ordered at above rates I will mail in August a **SELECT TESTED QUEEN.**

Just received, a carload of Root's goods, which I am selling at Root's prices plus carload-rate freight.

Bees, Honey, and Beeswax bought and sold.

W. O. VICTOR,
Wharton, Texas.

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Honey Column.

CITY MARKETS.

CHICAGO.—There is very little trade in honey. The market is cleared up of all kinds of comb honey, and not any of the new crop has appeared. Extracted is dull, at prices lately quoted. Beeswax lower, but selling well at 27.
R. A. BURNETT & Co.,
May 19. 163 S. Water St., Chicago, Ill.

BOSTON.—We quote our honey market with very light demand; and, although stocks are also very light, yet quite equal to any demand that there is or any that is likely to be for some time. Our market on fancy white is nominally 17; A No. 1, 15@16, and No. 1, 14, with positively do demand for dark honey at any price. Our market on extracted runs from 7 to 8½, according to grades.
BLAKE, SCOTT & LEE,
May 22. 33 Commercial St., Boston, Mass.

MILWAUKEE.—This market does not present any new features since our last report, only the supply of honey of all kinds is very small, and demand rather small also; yet we think if we had some fancy comb honey it would sell well. We now quote fancy 1-lb., 15@18c; A No., 15@16; No. 1, 13@14. Extracted, in barrels, kegs, or pails, white, 8½@9½; dark, 7@7½. Beeswax, 25@28.
A. V. BISHOP & Co.,
May 24. Milwaukee, Wis.

KANSAS CITY.—The supply of comb and extracted is light. We quote No. 1 white comb, 14@15; No. 1 amber, 13½@14; No. 2 white and amber, 13@13½. Extracted, white, 8; amber, 7. Beeswax, 22@25.
C. C. CLEMONS & Co.,
May 21. Kansas City, Mo.

COLUMBUS.—No honey on the market. Demand would be limited, owing to strawberries.
EVANS & TURNER,
May 19. Fourth and Town Sts., Columbus, O.

DETOIT.—Fancy white comb honey, 15@16; No. 1 white, 14@15; fancy dark and amber, 10@12, with little demand for all grades, and but little in sight. White extracted, 7; dark and amber, 5@6. Beeswax, 25@26.
M. H. HUNT & SON,
May 24 Bell Branch, Mich.

NEW YORK.—Our market is practically bare of comb honey, and there is a good demand for white at from 13@15c, according to style of package and quality. The market on extracted is rather quiet, and inactive. New crop is slow in coming in, and prices have not been established. Beeswax holds firm at 27@28.
HILDRETH & SEGELKEN,
May 21. 120, 122 West Broadway, New York.

WANTED.—Comb and extracted honey. State price, kind, and quantity.
R. A. BURNETT & Co.,
163 South Water St., Chicago, Ill.

FOR SALE.—100 lbs. of good ripe fruit-bloom honey, in cans; 8c per lb.
EDW. SMITH, Carpenter, Madison Co., Ill.

FACTS About Bees.
REVISED EDITION.
How to get
GILT-EDGED HONEY
Send 2c stamp to
THE A. I. ROOT CO.,
Medina, Ohio,
or F. Danzenbaker,
Box 66, Washington, D. C.

QUEENS, GOLDEN ITALIANS. Unexcelled for business, beauty, and gentleness. Bred from the best of stock obtainable. Untested, 70 cts. each; 6 for $3.75. Tested, $1.00 each. Extra fine breeding-queens, $2.00 each. E. A. SEELEY, Bloomer, Ark.

FOR SALE $2000. The BEST FAMILY TRADE in honey and maple syrup in U. S. A. Best clover and basswood honey was sold for 25 cts. per lb. the past winter. Personal introduction to about 2000 patrons. Refer to editor af *Gleanings*. Address
X Y Z, care of *Gleanings*, Medina, Ohio.

WANTED.—To sell 200 combs in Simplicity and Hoffman frames, wired, and built from full sheets of foundation; $20.00 takes the lot.
GEO. E. HILTON, Fremont, Mich.

FOR SALE.—About 20 2d-hand Dovetailed hives, 8, 10, and 12 frame sizes; complete with covers, bottoms, and supers, but no brood-frames. Forty cents each. E. R. HARLOW, Plymouth, Mass.

Albino Queens. If you want the most prolific queens; if you want the gentlest bees; if you want the best honey-gatherers you ever saw, try my Albinos. Untested queens, $1.00; tested, $1.50.
J. D. GIVENS, Lisbon, Texas.

ITALIAN BEES and QUEENS FOR SALE
Queens, $1.00; bees, by the pound, $1.00; nuclei, two frames, with queen, $2.00; one frame, $1.50; full colonies, $4.00.
MRS. A. A. SIMPSON, Swarts, Pa.

Sharpless Cream Separators—Profitable Dairying.

Wants and Exchange.

WANTED.—To exchange comb foundation for wax. Write for terms to B. CHASE, Earlville, N. Y.

WANTED.—To buy 500 bu. No. 1 dry rice popcorn.
GEO. G. WILLARD, 270 Pearl St., Cleveland, O.

WANTED.—Responsible young man wishes to lease a small general merchandise business in the East. P. O. Box 23, Miller Place, Suffolk Co., N. Y.

Special Notices by A. I. Root.

ONION SEEDS FOR GROWING SETS.

As the onion seed mentioned on page 378, last issue, is not yet all sold, we offer Yellow Danvers at 50 cents per lb., and Red Wethersfield at 40.

SWEET-CLOVER SEED—ADVANCE IN PRICE.

At present writing we are not able to obtain any sweet-clover seed so as to sell it for less than 15 cts. per lb; single pound, by mail, 25 cts. We shall probably be able to make something like our old prices when the new crop is gathered, but can not promise. It seems to be much the fashion nowadays to put *all* clover seeds "away up." This is good for the grower, but a little hard on the purchaser. We may be able a little later to make a lower price on lots of 10 and 25 lbs. If so, we will advise you.

A BARREL OF SEED POTATOES TO EVERYBODY WHO SENDS US $1.00 FOR GLEANINGS.

While our potatoes hold out we will send a barrel of seconds free of charge to everybody who sends us $1.00 for GLEANINGS, past, present, or future; and we will sell a whole barrel of firsts to every old subscriber who sends us $1.00 for a new name as heretofore explained. Please notice that this barrel of potatoes as a premium for getting subscribers is only for this month of June. If you wait till next year, or even next fall, and then send in your dollar, expecting a barrel of potatoes, you can not have it. I have thought best to say this because a good many were disappointed when we on one other occasion several years ago offered a barrel of potatoes as a premium. Some of the friends got an idea that we kept up such a scale of liberality all the year round, but that was a mistake. Our early potatoes are about all gone, but we have several hundred bushels of medium and late ones as follows: Both firsts and seconds of Mills' Prize, Carman No. 1, Manum's Enormous, and Adirondack. Of firsts, we have only the Russets; seconds only, Monroe Seedling and Blue Victor. Here is what one customer says in regard to our Blue Victor seconds:

> The tardy barrel of Blue Victor potatoes came to hand at last, and are a very agreeable surprise—much larger (for seconds) and in better condition than I expected.
>
> D. W. DICKINSON, Hickman, Ky.

We have 15 bushels left of Maule's Commercial. This is the potato for which I paid $10 for a single tuber when I got my start, and that only a few year ago. From a single tuber, with the aid of the greenhouse, I grew a barrel in one season. Maule's price on these is $4.00 per bushel; but we will give a bushel as a premium for one new name as above; ½ bushel as premium for every dollar you send for GLEANINGS.

THE FAULTLESS SPRAYERS, AND ARE THEY FAULTLESS?

I mentioned last year having quite a few complaints to the effect that sprayers would not work. To avoid any similar trouble this season we have examined our whole stock, going up into many hundreds, to see that every sprayer works right when it is sent out. Well, now, a great many of them are sent by mail. It is often cheaper, and there are postoffices in thousands of places where there are no express offices; but they are more likely to be damaged, in spite of our most careful packing, than by express. Sometimes a trifling bend or bruise can be remedied with the fingers. A few days ago a friend returned a sprayer, saying it would not work a bit. When it was unpacked I found the brace that connects the reservoir with the pump had a kink in it. I put my thumb on the kink, and in about a second of time the sprayer worked as nicely as one could ask for. It cost 25 cents postage each way to get the sprayer back and forth. Who is going to lose this fifty cents? I have taken pride in making very small margins on these sprayers. We buy them in large lots, and retail them at but a few cents' advance, and we do not make profit enough so that we can stand charges back and forth, especially when we are in no way at fault. If the sprayer is damaged, look it over carefully and try to save expense by fixing it if you can. If some of the solder is broken loose, get a tinsmith to fix it, and we will pay the expense, even if we do not agree to stand damages in transit. If the tube gets out of place, have the tinsmith adjust it so the air-blast will blow right against and over the top of the water-tube. The water-tube can be bent if necessary so as to get it in just the right position. One more thing: A sprayer was just returned from California, the owner saying it would not work; and the whole trouble was, the leather plunger was not oiled according to directions on the tag attached to the sprayer. In fact, this tag was on the pump when it came back, saying in plain print, "Keep the plunger well oiled." Of course, the manufacturers oil the plungers when the sprayers are sent out, but they have to be made and packed up sometimes months ahead; therefore you should not attempt to use your sprayer at all until you *first* oil the leather plunger; and if you want it to work nicely, *keep* it well oiled. The card that goes with the pump gives directions for preparing insecticides; but we can furnish a complete sheet made out by the experiment station for preparing and applying all sorts of chemicals for insects, bugs, and worms. Now, we are working hard to help you in the fight against our insect foes; but please do not put additional burdens on our shoulders if you can help it.

By Return Mail.

Owing to our unusually favorable season for rearing queens I shall be able to fill orders same day received, after June 1st, with large vigorous queens reared under the swarming impulse. Our motto is not *how many* but *how good* queens we can rear. We make no advance in price on *selected* queens, for the reason no queen will be sent out that is not *perfect* in every apparent particular. Bred from Doolittle's best breeders of the golden strain, and crossed with drones of Hutchinson's "Superior stock." Untested queens, $1.00 each; $5.00 for 6; $9.00 for 12. Send for circular, and with it will be sent "How to Build a House Apiary" (illustrated).

JEWELL TAYLOR, Forestville, Minn.
Money-order Office, Spring Valley.

Lone Star Queens.

June tested queens, $1.00 each; untested, 65 cts.; dozen, $7.00.

G. F. DAVIDSON,
Fairview,
Wilson Co., Texas.

Queens.

Use No Smoke. **It is not necessary** with the **Sweetheart** strain of bees. A postal card or letter will bring my descriptive circular and price list of these **gentle hustlers** and other strains. I am booking orders for them now, which will be filled in the order received. Don't delay.

A. J. WRIGHT,
Bradford, Steuben Co., N. Y.

REMOVED!

EARLY QUEENS. W. H. Laws has removed his entire queen-rearing apiaries to Round Rock, Texas, where he will be better fitted than ever to fill orders for the LAWS strain of FAULTLESS 5-BANDED bees the coming season. BREEDING QUEENS always on hand. Price $2.50 each. I am also breeding the leather-colored stock from imported mothers. Tested queens, either strain, $1.00; 6 for $5.00; untested, 75c; 6 for $4.00. Queens ready in season.

W. H. LAWS, Round Rock, Texas.

SUPERIOR HONEY QUEENS. Bred from our superior strain of Italian Queens. Untested, each, 70c; ½ doz., $3.75; tested, $1.00; ½ doz., $5.50.
LEININGER BROS., Fort Jennings, O.

15 cents gets poultry, bee, and fruit journal one year, if ordered now; regular price 35c.
POULTRY, BEES, AND FRUIT, Davenport, Ia.

Superior Stock.

Every bee-keeper who has had experience with several strains of bees knows that some are far superior to others—that there is scrub stock among bees, just as there are scrub horses, cattle, sheep, and poultry. Let me give my own experience. Years ago, while living at Rogersville, I made a specialty of rearing queens for sale. Before engaging in this work I bought Italian queens, and Italianized, not only my own bees, but all within three miles of my apiary. In buying those queens I think that I patronized nearly every breeder in the United States; and even in those years of inexperience I was not long in noting the great difference in the different strains of bees. The queens from one particular breeder produced bees that delighted me greatly. They were just plain, dark, three-banded Italians, but as workers I have never seen them equaled. They seemed possessed of a steady, quiet determination that enabled them to lay up surplus ahead of the others. Easier bees to handle I have never seen. It sometimes seemed as though they were too busy attending to their own business to bother with anything else. Their honey was capped with a snowy whiteness rivaling that of the blacks. In addition to these desirable traits must be added that of wintering well. If any bees came through the winter it was the colonies of this strain. They came as near being ideal bees as any I have possessed. All this was twenty years ago; and several times since then I have bought queens of this same breeder, and I have always found this strain of bees possessed of those same good qualities—industry, gentleness, and hardiness. In addition to this they cap their honey as the blacks do theirs. I have frequently corresponded with this breeder, and with those who have bought queens of him, and I am thoroughly convinced that he has a strain of bees that are far superior to the general run of stock. If I were starting an apiary for the production of honey, I should unhesitatingly stock it with this strain of bees.

This breeder has always advertised in a modest, quiet sort of way, nothing in proportion to what his stock would have warranted, and I have decided that I can help him, and benefit my readers, at a profit to myself, by advertising these bees in a manner befittingly energetic.

The price of these queens will be $1.50 each. This may seem like a high price, but the man who pays it will make dollars where this breeder and myself make cents; and when you come to read the conditions under which they are sold, it will not seem so high. The queens sent out will all be young queens, just beginning to lay, but, as there are no black bees in the vicinity, it is not likely that any will prove impurely mated. If any queen SHOULD prove to be impurely mated, another will be sent free of charge. Safe arrival in first-class condition will be guaranteed. Instructions for introducing will be sent to every purchaser, and if these instructions are followed, and the queen is lost, another will be sent free of charge. This is not all; if, at any time within two years, a purchaser, for any reason WHATEVER, is not satisfied with his bargain, he can return the queen, and his money will be refunded, and 50 cents extra sent to pay him for his trouble. It will be seen that the purchaser runs NO RISK WHATEVER. If a queen does not arrive in good condition, another is sent. If he loses her in introducing, another is sent. If she should prove impurely mated, another is sent. If the queen proves a poor layer, or the stock does not come up to the expectations, or there is ANY reason why the bargain is not satisfactory, the queen can be returned and the money will be refunded, and the customer fairly well paid for his trouble. I could not make this last promise if I did not KNOW that the stock is REALLY SUPERIOR.

I said that the price would be $1.50 each. There is only one condition under which a queen will be sold for a less price, and that is in connection with an advance subscription to the REVIEW. Any one sending me $1.00 for the REVIEW for 1900 can have one queen for $1.00; that is, I will send one queen and the REVIEW for 1900 (and 12 back numbers, free) for only $2.00. Of course, this special offer is made for the sake of getting the REVIEW into the hands of those who are unacquainted with its merits. Orders will be strictly in rotation.

W. Z. Hutchinson, Flint, Mich.

BEES THAT GET THE HONEY.

"I bought fifteen queens last year. The six I got from you have about completed their first supers, 30 sections. None of the others have yet entered theirs."
W. W. Erb, Ashland, Oregon, April 22.

The above explains why my customers "stick to me." They like nice gentle bees that pile up the honey. No pains is spared to have *every queen* as *good as possible.* A few last year's select, $2 00. Breeders, $3 to $4.00. Untested, 75 cts.; six for $4.00; dozen, $7.50; for select, add 25 cts. each. No culls sent out. Circular free. See GLEANINGS, April 15.

J. B. CASE, Port Orange, Fla.

IMPROVE YOUR BEES

by buying some of Hyde's improved strains of either golden Italians, three-band Italians, or Holy Lands. We know what good queens mean hence breed for honey, gentleness, etc. Send for 20-page circular of valuable information for the honey-producer. We do not rear poor queens, and do not compete with cheap breeders. Our prices, either race your choice: Untested, before June 1, $1.00; 6 for $5 00. Tested, $1.50. After June 1, untested, 75c; 6 for $4.25. Tested, $1.25. Discount for quantities. Breeding queens a specialty.

N. B.—For every $10.00 sent us for queens, we will, during August or September, mail one select tested queen, or for every $25.00 one fine breeder.

O. P. HYDE & SON, Hutto, Texas.

Italian Queens. Five-banded or three-banded; bred for 20 years for gentleness, hardiness, and gathering honey from red clover. Tested, $1.00; untested, 50 cts.; 6, $3.00; 12, $5 50. No inferior-looking queens sent out. Fair treatment to all.
SEWARD STEFFY, Bishopville, Morgan Co., O.

STRONG TESTIMONY

in Favor of

Moore's Strain of Italians

Frank Benton, of Washington, D. C., whose name is familiar to all progressive apiarists, writes me, Feb'y 20. 1900, as follows:

"I have several times, in the course of correspondence, and in conversing with bee keepers, had occasion to answer the question: 'Where can the best Italians be got?' It is, perhaps, not an easy thing to say, with certainty, but at least I have felt I might be able to tell where GOOD ones could be obtained. A number have referred to you, for, although I have not tested your stock personally, I thought I knew pretty well, from general reputation, its character. A bee-keeper near here—Mr. Geo. A. Lamphear, of Vienna, Va.—who got some queens of you on my recommendation, is so well pleased with them—in fact, gives your bees such a good recommendation to me for gentleness and working qualities, particularly their working on red clover, that I thought I would like to try some myself."

I was not aware that Mr. Benton was recommending my stock until I received the above letter. Such testimony as this certainly has great weight. Don't you think so? My stock is the result of 21 years of careful breeding, by selecting the best honey-gathering stock each season from which to rear queens, and crossing them as far as possible with drones not akin.

Prices for June: Warranted queens, $1.00; 6 for $5.00; 12 for $9.00. Select warranted, $1.25 each; 6 for $6.00; 12 for $11.00. Strong 3-frame nucleus, with warranted queen, $3.00. Safe arrival and satisfaction guaranteed.

J. P. Moore, Lock box 1, Morgan, Pend. Co., Ky.

The A. I. Root Company,

10 Vine Street,
Philadelphia, Pa.

Direct Steamer for Florida, Georgia, North and South Carolina, Virginia, Maryland, Delaware, and all points East and South.

All orders sent to Philadelphia office will have same attention and care as Medina. 1900 goods now in stock. Order before further advance. . .

2000 2d-hand 60-lb. Cans.

We have about 2000 screw-cap second-hand 60-pound tin cans for holding honey, all practically as good as new, and two cans in a box. We can ship promptly, so long as they last, at these low prices, f. o. b. Chicago :

10 Boxes, 2 Cans in Box, 50c per Box ; 20 Boxes or More, 45c per Box.

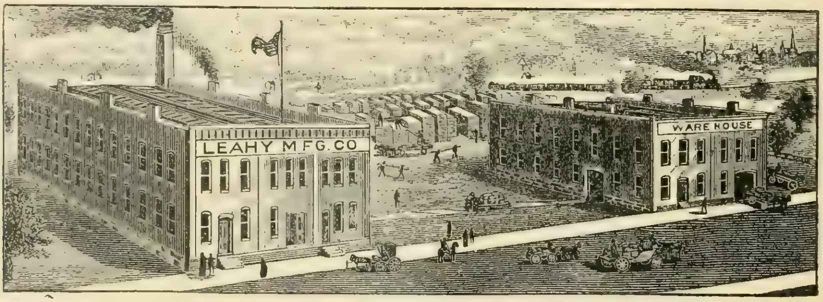
Don't Forget that We are Headquarters in Chicago for Bee-supplies

If you want good treatment, good service, and good goods, send us your orders.

We are also publishers of the AMERICAN BEE JOURNAL, the oldest bee-paper on the continent, and the only weekly. Regular price, $1.00 a year ; or a "trial-trip" subscription will be sent to a NEW subscriber from the time your order is received to the end of 1900, for ONLY 30 CENTS.

Catalog and sample copy of the weekly American Bee Journal free. Send for them.

GEORGE W. YORK & CO.,
118 Michigan St., - Chicago, Ill.



For Apiarian Supplies, address **LEAHY MFG. CO.**

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GLEANINGS IN BEE CULTURE

A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS.

ILLUSTRATED SEMI-MONTHLY

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STRAY STRAWS FROM DR C. C. MILLER

M. AMBROZIC, Moistrana, Austria, has sold 25,905 colonies of bees in the past 13 years.

TO MAKE wooden feeders water-tight, put blotting-paper, when nailing, between the joints.—*Lpz. Bztg.*

HANNEMAN, inventor of perforated zinc, now over 80, lives in South America, has 335 colonies of bees, and raises grapes.

REAUMER estimates that a strong colony uses 100 pounds of pollen in a year. [This looks like a large amount, but it may be right. —ED.]

BOSNIAN BEES are the latest candidates for public favor. Of course they excel; stingless, and work more hours than any other bee, besides being the hardiest.

APPRECIATIVE NOTICES of considerable length have lately been general in foreign bee-journals touching Root's A B C of Bee Culture, and the wish has been expressed that it might be translated into other than the English language.

THE BIG-LITTLE-HIVE controversy that has been running in American bee-journals has been summed in a masterly manner—where do you think? In the German *Bienenzucht*, by Dr. Soergel. [But you did not tell us what the summary was.—ED.]

FRIEND A. I. ROOT, I think you misinterpret friend Gressman, p. 407. When he says he'd take all he could get from one cheating him intentionally, he hardly means he would take more than is right, but that he would take all he could get of what rightly belonged to him.

YOU RIGHTLY emphasize stimulative feeding for rearing queens, Mr. Editor, p. 398 but forget to say that nothing is more stimulating than a heavy flow of nectar in the flowers. At such times would feeding be of any use? The swarming season is a good time to rear queens, not because it is the swarming season, but because the bees are stimulated by a big flow.

REEPEN estimates that the bees of an ordinary colony will visit 2,000,000 flowers in a day, or 200,000,000 in a season. If one tenth this number is fertilized by the bees, and the fertilization of 20,000 flowers is worth 1 cent, then the fertilizing labors of one colony for a season is worth $10 to agriculture.

IN A PRIVATE LETTER, Thos. Wm. Cowan says: "They have made me president of the Museum Association here at Pacific Grove, Cal., so they do not intend to keep me idle. I am just setting out a botanical garden, and we are going to have a flower show on the plan of those we have in England. It would be too far for you to send exhibits or I would ask you to do so."

TWO MYSTERIES in connection with finding queens. You look very, very carefully all over a comb, and the queen is not to be seen; but suddenly she appears, calmly walking right before your eyes. Where or how she was hidden is the mystery. Another mystery is that often a queen is harder to find in a mere handful of bees than in a strong colony. [I agree with you in both.—ED.]

THE AGE AT MATING of 30 queens is given in *Bienen-Vater*. It varied from 4 to 9 days, the largest number being at 6 days, and the average of all being 6⅓ days. [I once conducted a series of experiments, and, if I remember correctly, the average date seemed to be 7 days, and the earliest 3 days; but in this case I had reason to suspect the queen had been confined in the cell by the bees after the regular day for hatching.—ED.]

THE INSTRUCTION as to finding queens, p. 396, is very full. The sifting process is good as any in a troublesome case. Here's an additional plan. Put the combs in pairs; after they have stood a minute the queen will be in the middle of one of the pairs. If the pairs are in separate hives, and you let them stand long enough, the bees will become uneasy in each pair but the one containing the queen. [I never tried this plan, but see no reason why it would not work.—ED.]

CULTIVATE in the child a love for flowers. With some there seems a passion for flowers from earliest childhood; others have the taste aroused not till years have passed. Until I was a man grown I saw no beauty in a flower or a fine sunset. A. I. Root's love for flowers seems to have come much later. God painted with exquisite touches the commonest leaf, painted it for our enjoyment, and he who does not see its beauty should pray that God may open his eyes.

To PREVENT STINGS, anoint the hands with a mixture of finely powdered naphthaline with twice its weight of melted vaseline.—*Bulletin d'Avesnes.* [If the bees make a sudden onslaught as when the hive is jarred, or something comes loose with a bang, no preparation of any sort will prevent them from stinging; but I have found that carbolic acid reduced 500 times in water, and smeared over the hands, will prevent the bees from *feeling around* to get a good place to sting; but it will do nothing to prevent a sudden dart, and two-thirds of the stings are received from bees that make a shot right at one.—ED.]

PFARRER WEYGANDT, in *Imkerschule*, asks whether I am correct in saying in *Bee-keepers' Review* that the finest wax can be got from old combs by treating, a week before melting, in a solution of sulphuric acid. That must have been another of the numerous Miller family, friend Weygandt, who said so; I don't know any thing about it. [Whether you or somebody else was responsible for the statement, there is just a mere shadow of truth in it. The dirtiest kind of wax can be rendered a bright lemon color, beautiful in tint, and aromatic in smell. A solution of sulphuric acid in water raised to about 180 degrees F., will purify every bit of dirty wax.—ED.]

ARE YOU SURE, Mr. Editor, that "bees get but little if any honey" from dandelion? One spring I *shook* (not extracted) out of the combs of one colony one or two pounds of very thin honey or nectar at a time when I thought they were working on nothing but dandelions. Dadant's Langstroth says it yields honey, and I have always supposed it yields much. [Since you raise the question, I am not so sure, doctor; and yet during this spring I watched the bees quite closely on the dandelions that are so thick about my house. They seemed to be getting only pollen; but perhaps they were also taking a little honey. In looking up authorities, I see there are some who claim that bees do get honey from dandelions; but the amount, even then, is admitted to be small.—ED.]

A. D. SHEPARD thinks the time of taking bees out of cellar should have a fresh airing. He suggests that, if the mortality of the last 20 days of confinement is four times as much as the previous mortality, it might be a saving to take out earlier. That depends. The question is not whether the last is so much worse than the first part, but whether it would be better or worse out than in. If perfectly healthy, they may live better by staying in cellar; if troubled with diarrhea it may be a saving to hustle them out. Something depends on weather, *much* on locality. A locality in Wisconsin may have a winter milder on bees than one further south. But a fresh airing of the subject may do no harm. [If this subject is to be "aired," it had better be aired along next January, then bee-keepers can put the matter to a practical test a little later, when the subject is fresh on their minds.—ED.]

THE EDITOR of *Le Rucher Belge* gives this instructive item: Feb. 19, bees flew in a rain and fell to the ground chilled. After 24 hours, 50 of them carried into a warm room revived in 10 minutes, and flew in 30 minutes. After 48 hours, 30 were picked up, and all but 3 revived. After 72 hours lying on the wet ground, with one night's freezing, 22 were found, and 8 of the 22 flew after 5 hours' warming. [This is a very interesting series of experiments. Some years ago a bee-keeper at the Ohio State convention, held in Columbus, stated that he had some bees that had collected on a window in the wood-shed, had become chilled, and remained in that condition all winter, and that, when it warmed up in the spring, those same bees revived. Of course, we all laughed at him; and while I do not believe for a moment bees will stand a freeze of three months, yet we need not be surprised to learn that they can survive a chill of six days. This might be an interesting experiment for an experiment station to take up.—ED.]

PICKINGS
FROM OUR NEIGHBORS' FIELDS.
BY "STENOG."

Hot and dry the weather is.
Nectar now is failing;
Bees are hunting all around,
Their short stores bewailing.

BRITISH BEE JOURNAL.

The editor is asked if honey infected with the germs of foul brood is dangerous to the human system. He says it is entirely harmless so far as man is concerned, but death to bees.

◆

A correspondent in Wales reports the first sealed honey April 28. The editor says it was probably from gooseberry-bloom. That seems remarkable for a country lying north of the United States.

◆

Mr. Chas. Benhaligow, in Devon Co., England, had three swarms on Sunday, April 22. To-day, just a month later, none have been reported in Medina, we believe, and yet we are ten degrees south of the place mentioned.

◆

Mr. Walton, writing from Weston, England, April 28, says, "About ten or twelve days ago nature awakened with a rush. Plums, peas, dandelions, gooseberries, currants, etc., are all in full bloom, and the bees are reveling to their hearts' content."

◆

One man in England has been successful in growing hyacinths. Mr. Belderson says, "I certainly wish him every success, for my bees have been busy early and late on hyacinths. We are looking forward to a good time." Here's a good chance for some one to combine business with pleasure.

⁂

In regard to giving to bees combs containing dead bees, the editor says, "Bees will certainly manage to remove dead bees from combs, if given as stated, but how they do it has always been a mystery to us; and it must involve so much time and labor that it is doubtful economy to impose the task upon them if the great majority of the cells are so occupied."

⁂

In reply to a question from France as to whether it would be a good plan to join a swarm to an established stock, the editor says, "It is always a risky operation to join swarms to established stocks, and we do not advise it. By far the better and safer plan—if a large harvest is desired—is to unite two or more swarms, and thus make up a very strong colony."

⁂

As everybody knows, Queen Victoria has, for the first time in forty years, made a trip over to Ireland. In commemoration of the event a box of one dozen sections of honey from the four provinces of Ireland was presented to her Majesty. The box containing the honey was specially made of Irish bog oak, by the Abbott Bros., with glass sides, and bore on the lid the letters V. R. in a silver shamrock pattern. It is a pity there has not been a little more mutual exchange of honey between those two nations during the last century. By the way, the Queen is just 81 as this is written. Her reign has now extended over a period of 63 years, exceeding by 3 years that of any other English monarch. Every fourth person in the world is one of her subjects.

⁂

CANADIAN BEE JOURNAL.

There is to be a congress of bee-keepers in Paris, Sept. 10–12. What a Babel of languages they'll buzz in!

⁂

The editor says, "Queen-excluders that have been used on foul-broody colonies are perfectly safe to use on any hive of bees, without any disinfecting." If I am not wrong, disinfecting is strongly recommended by some under such circumstances.

⁂

In addition to the need of help in India our Canadian friends now have an additional task on their hands in the work of relieving the destitute and homeless thousands of Hull and Ottawa, so sadly stricken by fire. Unlike India, distance will not prevent the speedy giving of relief to the Canadians by the people of that country and also by those on this side of the border.

⁂

Active measures are being taken in Canada to relieve the suffering in India. As the war in Africa is costing England $1000 a minute, one can not help wishing that that sum could be sent to India in the shape of food rather than to use it for pumping lead into the Boers. At present the famine in India threatens to become historical, some 700 being reported as dying daily. The pestilence that always follows a famine is more to be dreaded than famine itself. Strange as it may seem, India has probably more money invested in religious edifices than any other nation in the world—single temples there costing more money than can be computed, and so beautiful that words can give no description of them.

⁂

The editor says, "The matter of preventing the spraying of fruit-trees when in bloom has been taken hold of with determination by the Ontario B. K. A. executive. Secretary Couse has had posters printed in the name of the Association, containing a copy of the act of Parliament relative thereto. Each member of the Association and affiliated society will be furnished with copies to be displayed in local postoffices, where they may be read by the public." When our Canadian friends make a law they expect it to be observed, and it is; but on this side of the line it depends on circumstances. Canada, I observe, is making astonishing strides in the raising of fruit, especially apples, of superb quality.

⁂

AUSTRALASIAN BEE-KEEPER.

In regard to the cause of comb-cappings being discolored, the editor says:

> I have always understood the appearance of comb honey is the production of certain strains of bees—the Asiatic varieties tending very much that way. In the same apiaries some colonies produce more or less greasy-looking capping to their comb. The dark races of bees cap their honey with white caps. The goldens do not produce so white a capping as the black bee. The Ligurian produces honey more greasy in appearance, and the Holy Land bees very greasy. Such has been my experience, but in all apiaries of colored bees the capping varies. Is that caused by weather or the strain of bees? Have you ever noticed that sections over the center of the brood have a more greasy appearance than those to one side? What is the cause?

⁂

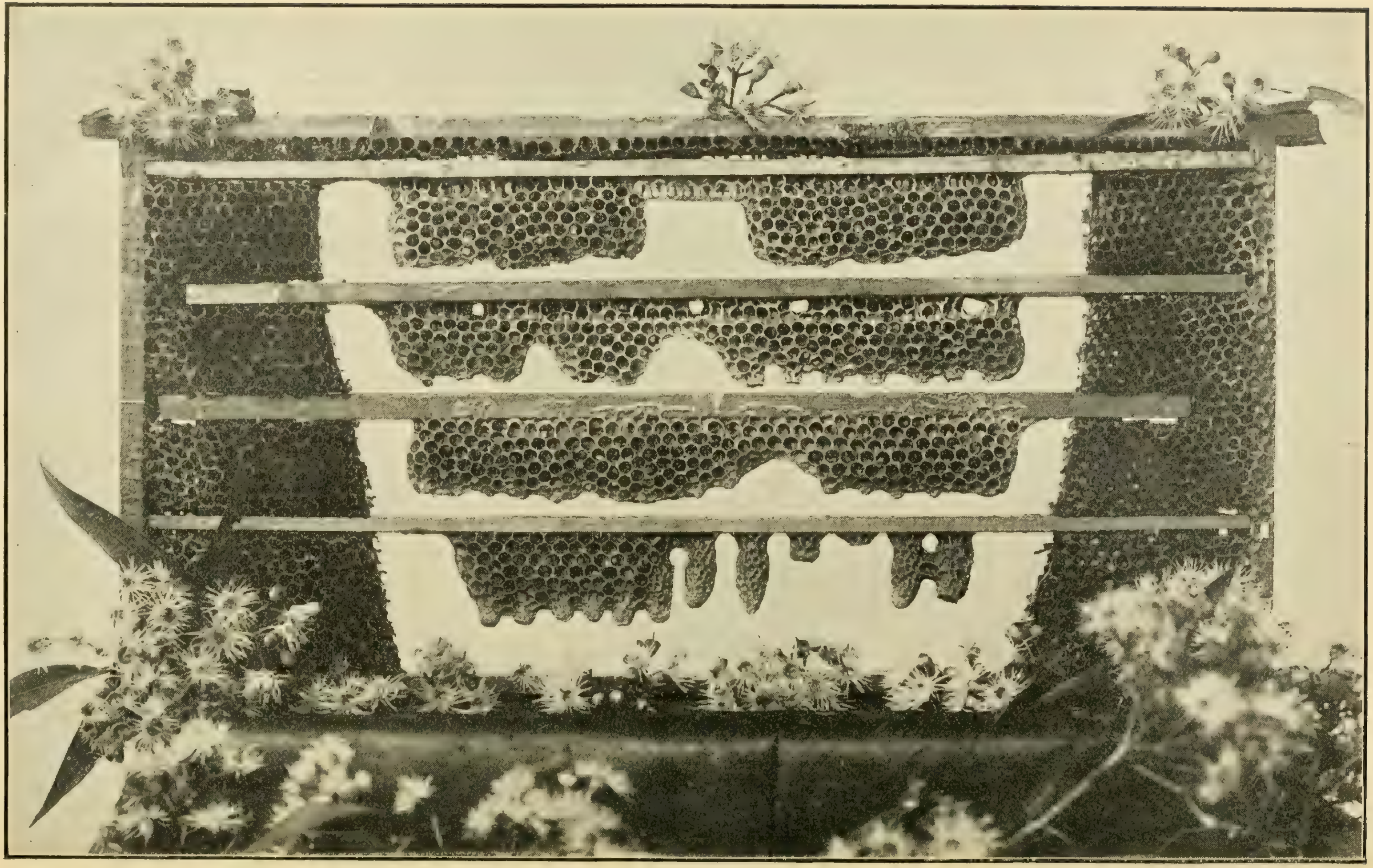
PROGRESSIVE BEE-KEEPER.

Mr. Doolittle attributes the famine in India to the fact that the masses are so plundered there in the full years that they are forced to live habitually at the margin of existence, hence they starve when the food supply falls off somewhat.

⁂

AMERICAN BEE JOURNAL.

The necessity of cross-pollination of fruit-bloom is a subject that should never be considered threadbare. Prof. Cook says his sister in California was wondering, in 1891, why her fruit-trees were not bearing as well as usual. The trees bloomed, but the fruit did not set. Mr. Cook suggested a decrease in the number of bees, and accordingly an apiarist was engaged to remove his bees to the place, and at once there was a marked benefit. She has kept the apiary there ever since. She feels that she can afford to pay for the presence of the bees, and she is right. While other insects might help toward pollination, this incident shows that bees are *the* thing for the business, and that in their absence the hope of a good fruit crop rests on a slim foundation.



QUEEN-CELLS FROM DRONE AND WORKER-COMB.

GENERAL CORRESPONDENCE

DRONE-CELLS VS. DIPPED CUPS.

How to Convert Drone-cells into Queen-cells; Royal Jelly Superior to Ordinary Worker Larval Food.

BY H. L. JONES.

Mr. Editor: — As you are always open to conviction, and ever ready to welcome the truth, even when it conflicts with your own preconceived notions, it is with confidence that I resume the discussion on our different methods of queen-rearing. I work and experiment with bees the whole round of the year, and verify every statement I make, so that I have a big advantage over you with your few months of practical work per year. I want to convince you that you are making an error in claiming so many advantages for dipped cells over drone-comb cells. Both in GLEANINGS and in the new edition of the A B C of Bee Culture you state that we have to put our drone-cups into queenless colonies to get them started; but I will say that we have to do no such thing, although under some conditions we get better results by doing so; and I will further state that, whatever you can do with your dipped cells, we can do with our drone-cups; and I believe a little *better* too.

I have repeatedly tried dipped cells and drone-comb cells in equal numbers on the same stick, and almost invariably got better results from the drone comb. In the accompanying photo of queen-cells, note the bottom row. This contained six cells prepared from drone comb and six dipped cells, and was placed directly in the upper story of a strong colony with a laying queen below. The photo, I think, speaks for itself as to the most desirable and successful method, and it isn't simply a selected case either, but an average result. You claim that the dipped cells are more regular, also less liable to be damaged in handling; but I certainly fail to see either of these advantages; in fact, the photo shows the uniformity of the drone-cells, and how much *better* they are protected. Note how heavily the drone-comb cells are covered with comb incrustation, and the protection this affords. When a warm knife is slipped between these cells, and they are placed between the frames in queenless colonies, flat sides to the combs, they are almost as safe as if inclosed in cell-protectors, as only the extreme points are exposed at all, and I now rarely use cell-protectors with such cells unless in conjunction with spiral cages, when I have a surplus of cells. It may be important to mention that, after I prepare my row of drone-cells, and before inserting the jelly and larvæ, I always insert the end of my leadpencil, which is tapered off a bit, into every second cell, and give it a twirl. This enlarges the top of the cell a little, and gives it the exact appearance of a natural queen-cell, and it doesn't take ten seconds to do ten cells.

ROYAL JELLY AN ADVANTAGE.

Some breeders maintain that royal jelly is not essential when transferring larvæ into cell-cups; but this is altogether contrary to my experience, as I have in almost all cases had a much greater percentage of cells accepted by using a liberal supply of royal jelly. Observe the top row of queen-cells which were raised from drone cells in a queenless colony. The first seven cells were furnished with royal jelly and larvæ, then four cells were supplied with larvæ only, and the remaining eight cells were again furnished with royal jelly and larvæ. Just note the result. Every cell with jelly was accepted, but not one that had received no jelly, although these latter occupied the most favorable position.

WORKER-CELLS FOR QUEEN-CUPS.

The second batch of cells gives a view of queen-cells constructed from worker-cells, the larvæ being placed in every third cell for convenience in cutting apart. Out of fifteen cells given, twelve have been accepted; but it is not often that I use worker comb for this purpose, and I picture it here just to show where a good substitute can be obtained when no drone comb is available. I should also mention that, in the two upper rows of cells, the queens have all hatched out; and on account of the joints of the cells being removed they do not look quite so long as they otherwise would.

YOUNG V. OLD LARVÆ FOR QUEENS.

On the third row of cells I have been experimenting with young and old larvæ. To the left of the little neck, in the center of the frame, nine cells were grafted with larvæ about twelve hours old; and to the right, nine cells were grafted with larvæ nearly three days old. All the young larvæ were accepted, but only seven of the old larvæ, and these older larvæ were, of course, capped over and hatched out first. If Dr. Miller (Stray Straws, page 825, 1899), had seen these two batches of queens he would soon decide whether to follow the scientist or the practical man. A young larva grows very rapidly, and a three-day-old larva is much larger than any one who has not closely observed imagines. I shall probably have something more to say on this subject later on; but I will say right here that, while it may be all right in theory to raise queens from larvæ approaching three days old, such a course in practice will result in a very inferior class of queens.

In conclusion, friend Root, I will say that none of the above batches of cells were selected from others not so favorable to my line of argument, but the four lots (which are brought together for the convenience of the photographer) were put up under the usual circumstances prevailing in my apiary, and represent an ordinary week's operations.

The blossoms around the frame are from the bloodwood (*Eucalyptus corymbosa*), a large native tree, and a good honey-producer that is now in bloom.

Goodna, Queensland, Aus., Jan. 15.

[Well, now, friend Jones, I do not know that I have any desire to try to convince you that the Doolittle queen-cell cups are better than the drone-cells, as so much depends on what one is *used to;* and while perhaps the majority of queen-breeders in this country use the Doolittle method, yet I find there is a great variation in the use of that method. One prominent queen-breeder tried to convince our Mr. Wardell, our queen-breeder, that his own method was better than Mr. Wardell's. Said Mr. W., "Perhaps his method *is* better; but I know *just how* to work my plan, and I *get good results.* Now, please, Mr. Root, don't ask me to try some new-fangled way that I am not familiar with, and which might not work, when I think my way is good enough, both as to quality and quantity of queens."

I stand corrected as to the matter of getting drone-cells accepted in colonies having queens; and from what experience we have had later, I am convinced that both the drone-cells and the Doolittle cups can be used much in the same way. But now that we are enabled to make Doolittle cups "by the peck," and so easily, it strikes me that for convenience the artificial cups are to be preferred to those made out of drone-comb. But here again I suspect you and I will not quite agree.

As to royal jelly vs. larval food, our own experience is right in line with yours.

Referring to the picture, I am a little afraid some mistake has been made, for your description does not quite tally with the plate. For instance, you ask us to observe "the top row of queen-cells," when for the life of me I can not see any queen cells there, although there is a possibility they are all covered up by the comb. I have gone back and looked up the original photo, and find this plate was taken from the photo you sent us at the time you sent the manuscript. If you sent two pictures, and one failed to arrive, then we shall have to take your word for what you say.

If there is any advantage in having cells covered up with comb to protect them, it is a very easy matter to have the Doolittle artificial cups covered the same way. All that is necessary is to attach them to a piece of worker comb at regular intervals, and they will be almost completely obscured, just as shown in the bottom row at the left side of the cut. You see, friend Jones, drone-cells have no advantage over the artificial cups; and in one important point they lack one important feature; namely, that the cups can be made heavy so as to stand rough usage. Our Doolittle queen-cells can be shoved right bodily into the face of almost any comb without danger of mashing or crushing, and this is a matter of great convenience.

Later.—Since writing the foregoing I have had a talk with our Mr. Wardell, and I was surprised to learn he has lately been trying pieces of drone-comb, and more surprised that he is inclining to the opinion that the drone-comb method may be all right. But there is the one point that the Doolittle cells are stronger, larger, and look more like peanuts. If plenty of room makes good queens, the Doolittle cells offer that advantage.—Ed.]

WHAT TO DO WITH SOILED COMBS.

The Advantage of Hiving Swarms on Solid Combs of Honey; How to keep down Grass around Hives; Belgian Hares, etc.

BY F. GREINER.

We had quite an experience a year ago with soiled combs from colonies having died the winter before, and very many bee-keepers are more or less troubled with such combs every year. The question then arises, "What is the best use we can make of these combs?" I have seen it recommended within a short time to give them to young swarms. In my experience I found that to be the worst use I could put them to, and that in the face of the fact that sometimes young swarms will select for their home a hive that had been previously occupied by a colony, and is filled with soiled combs of the very worst character. Many a time have I hived swarms into hives full of comb, and not very bad comb at that; but in by far the most cases the bees would not stay, and could not be made to stay, not even by caging their queen. With me the bees seem to prefer to go back to their old home minus a queen; or if the queen was at liberty the whole company would respectfully bid me good-by. If one really wishes to utilize old combs for his young swarms, as good a way as I know of is to first let them go through a cleaning process on top of a good strong colony; and the more honey is stored in them by that colony, the better the result will be. It will nearly all be carried up into the sections, or used up some way. A young swarm hived on solid combs of honey will astonish the owner in the amount of section honey it will produce. A few soiled combs may be given to a young swarm at a time, after the same is well established in a new home, the same as is admissible or advisable in case of old colonies.

Grass and weeds around bee-hives and walks may be effectually killed by a solution of sulphate of copper — one pound of the chemical to one or two gallons of water. This mixture is poured around hives, etc. I take this recipe from the *National Stockman and Farmer.* Carbolic acid, I find, also answers for this purpose. I do not now remember how strong a solution I used. I found it out accidentally.

Tanbark is also being used for keeping down any vegetable growth about hives and the bee-yard. I first saw it recommended in the *Am. Agriculturist* last summer. The picture of an apiary was shown in the *American Bee Journal* a short time ago which looked very neat. The whole yard had been covered with the bark, and the hives were placed thereon. Where tanbark may be had, no doubt it could be used in this fashion to good advantage, although I should be a little afraid of fire. Salt is also used for killing weeds around hives; but if any stock ever finds it out there will be no end of trouble, and much mischief may be done in a little time. I have had some unpleasant experience in that line. No more salt on my—*bee-yard.*

Colonies contracting the swarming fever at two different times in one season, and sending out swarms, thus having the prime swarm of the second swarming-period led out by a queen of the same year's rearing, is a rather uncommon occurrence, but it will happen occasionally. Two such cases only have come to my notice in 25 years of bee-keeping.

A colony that raises its queen from the egg, or even from a nearly matured cell, at the beginning of the honey season is reasonably insured against casting any swarms during the season, providing the bees kept are natives or Italians. The late (or buckwheat) swarms, or any swarms appearing out of season, generally come from such colonies as are superseding queens.

Speaking about "Belgian hares" (Rambler, p. 211), I wish to say, although it has no bearing upon bee-keeping, that many a poor man or bee-keeper could easily, and with but little cost, raise quite a lot of a very good quality of meat for his own table by going into this industry in a small way. A small number of these animals may be grown without any cost, for all kinds of weeds, and refuse vegetables from the kitchen, can be made to serve as food for them. Children will oftentimes enjoy feeding them, and could take nearly all the care of them. The grass, weeds, and bushes growing along the highway in many places could be turned to very good use in growing Belgian hares. I grew them 25 years ago. One night dogs broke into the building and killed my whole flock of thirty or more. Late years I have again purchased stock, and grow it. Our table has been abundantly supplied with their meat for some time. From three months upward they will do to use. In fact, these young things make excellent broilers, and many epicures are beginning to find out their value. I find that, from three breeding does, I can grow as many young as and perhaps more than we can well utilize in our own home. If I cared to engage extensively in the growing of hares I could find a market at good prices for all I could raise. Sometimes I have thought I would go into it and drop the growing of capons, for it requires much more labor to grow the latter than the former, and the cost is a great deal more in proportion to the profits.

Naples, N. Y., April 16.

[The sulphate-of-copper solution, I have no doubt, will do the work very thoroughly; but will it do it as cheaply as an application of salt? It is our practice to buy a barrel of common rock salt, which is sufficient to take care of an apiary of 300 or 400 colonies for two or three years. Once or twice a year we sprinkle a very little salt around each entrance. Very often one application each year will answer provided there are not too many rains, so as to start up the grass again.

What you say about Belgian hares interested me greatly, especially as the Rambler and others have stated that this industry can be nicely combined with bee-keeping. A few days ago there came into my hands a pamphlet entitled "Belgian-hare Breeding," a practical treatise by J. W. Darrow, price 25 cents, published by the *Fancier's Review*, Chatham, N. Y. When I was in Colorado I saw several pens of these mammoth hares, about as large as a good-sized dog, and as gentle as kittens.

So far as I could learn, the industry was a profitable one, and the meat of the very finest. Indeed, it is claimed that it is very rich and juicy, with none of the greasiness of that from the ordinary barnyard fowl, and none of the "wild" taste of common wild rabbits or hares. It is also stated that it can be eaten by invalids and those with weak powers of digestion. Who knows but here is a panacea for those who feel the need of a meat food, and yet, perhaps, can not afford to buy steak at 12 or 14 cts., and in some localities 25 and 30 cts.?

One doe, according to the pamphlet referred to above, produces generally from six to twelve young at a litter, and from five to six litters during the year. On the average, one mother, it is stated, can produce as many as 40 hares in a season. Half of the first litter, the author assumes, will be does; and the offspring of these will bring the number up to 136—all this from one mother. It is variously estimated that from $300 to $400 can be made from a trio of three hares — two does and one buck—in one year, and the author pertinently asks, "Where are your cows that will do this? If you think this is exaggerated, show these figures to some breeder, and ask him to express his opinion."

Belgian hares of pure stock are quite expensive; but common stock can be bought for $1.00 each, and that is the price they sell at in the market for meat. It is also estimated that the price secured for the pelts pays for the feed; but, as friend Greiner points out, the food very often costs nothing when the hares are reared in a small way for family use.

I must confess that I know absolutely nothing about this industry, and the figures above given may be greatly overdrawn. I should be glad to hear from some of our subscribers, especially friend Greiner, in regard to the feasibility of growing Belgian hares along with producing honey. Let us have careful, accurate estimates of what has been done, and whether or not there are no disadvantages. For example, will these animals gnaw the bark of young trees in early spring when vegetation is scarce? and are they subject to disease?

Rabbits and hares are much cleaner in their habits than chickens, and, barring the possible danger of gnawing young trees, they would be much pleasanter to keep, and possibly much more profitable.

I have been satisfied for years that there are only a very few who can make bee-keeping a specialty. The great majority should run some other business in connection with it. Some have said that the growing of Belgian hares interferes as little with bee-keeping as any business. Let us have all the facts so our bee-keeping friends can be benefited. If one can add $200 or $300 to his annual income without very much outlay, and at the same time supply the family with one of the most delicious of meats, it will be quite a big item. —ED.]

ANTS AROUND THE BEE-HIVES; HOW TO EXTERMINATE THEM.

Mr. Abbott, and his Views on the Pure-food Bill Criticised.

BY E. H. SCHAEFFLE.

As a number of your subscribers seem to be troubled with ants, my experience with them may be of service to some. I think I have thrashed this same straw in the past. I once purchased a lot of bees that the owner assured me he would brimstone unless I bought them, as they drove him off his place. On examining them I found one of the stands had half of its combs filled with the large black wood ants. As the combs were "fixed and immovable" I turned the hive upside down, dusted Persian insect-powder freely among the ants, and then closed the hive for a few minutes, when I reversed it, and in a few minutes had the pleasure of seeing the bees carrying out the dead ants. I had no further trouble with that stand. I irrigate the ground on which my hives stand, and in consequence the ants are driven to the hives. They never enter the combs, but seek the spaces between the sections where the bees can not reach or glue them out. I have tried placing a ridge of insect-powder around the hive. While the bees do not seem to be affected by it, the ants avoid it for several days until it has lost its strength, when they remove it. A chalk-mark will prevent the passage of ants as effectually as a barb-wire fence will cattle; but the ants will remove the chalk, a particle at a time, until they have a passage through it, just as rats will pack glass, when placed in their holes, till it is all removed.

The best way to exterminate ants is to make a mixture of arsenic, Paris green, London purple, or strychnine, with syrup or honey. Put this in a dish, and the dish in a box, with the ends covered with wire-screen cloth that will admit ants but exclude all bees. Place this box on the trail of the ants, and they will carry the poison home, feed it to their young, eat it themselves, and soon the colony will be among the things that were.

It is almost incredible, the number of ants in a strong colony. I once employed a wood-chopper who came to me stating, "I have cut a tree down, but the ants have run me out." I examined the tree, and found it hollow. Ants were pouring out of the base in a solid stream, like bees swarming. Near the stump they were piled an inch deep, while a circle 20 feet in diameter gradually widened out as the ants migrated. The ant, like the snapping-turtle and the bulldog, holds on, and seems to wear the bee out by its tenacious hold.

GREASY SECTIONS.

Greasy sections with me are caused by a want of ventilation and excessive heat. Place a strong colony out in the heat of the sun, on a very hot day; partially close the entrance, and the cappings on the combs will soften, flatten down, absorb honey, and have a greasy appearance. I think if you were to place a section of comb honey in a warm oven you would get the same results, without reference to the queen or bees.

THE BROSIUS PURE-FOOD BILL.

I have received Mr. Abbott's paper containing my letter on the Brosius bill, and his reply. According to Mr. Abbott, the manufacturers of glucose, oleomargarine, embalmed beef, etc., have a perfect right to manufacture and sell the same "as such," and should be restrained only when they sell their products as the genuine article. This is on the line with the argument, "If I don't sell whisky, some one else will, so I may as well sell it." Glucose contains a large amount of sulphuric acid — so much in the commercial article that its use can not be other than injurious. Oleomargarine has been shown to contain paraffine, a mineral product that is certainly not a food, and is injurious to health. The embalmed-beef scandal is so recent that it is not necessary to review it. I contend that the manufacture and sale of any of these articles, *as food*, should be stopped. Mr. Abbott's apology for the manufacture and sale of these articles is lame. As it now stands, manufacturers snap their fingers at the laws, and proceed to make and sell their imitations. With their great wealth, political influence, and the indifference of the public, they are as free and safe as though no laws against the manufacture of their products had ever been passed. Now, I believe "self-preservation is the first law of nature;" and if we can have a law passed similar to that of the flour-millers, and proposed by the maple-sugar makers, to place a stamp on each package containing glucose when sold as honey, showing that it is a mixture, and not pure honey, the adulteration of honey with glucose will be stopped. No one will buy glucose as honey if he knows it is not honey.

We have, as I presume most States have, strict laws against the adulteration of honey, sale of oleomargarine as butter, and short-weight butter, in California; but I can buy oleomargarine as butter, in short-weight rolls, and glucose as honey, in any crossroads grocery. The trusts say, "What are you going to do about it?" When men like Mr. Abbott will act as apologists for its existence we may well ask, "What are we going to do about it, the canteen and every other trust?" The time is here when the people must speak, and that in no mild tones. If the voice of the people is the voice of God, then it should be heard, and the tones should be so loud that all should hear them. I can only repeat what I have written before, "The only way to protect honey from adulteration with glucose is to require that each and every package containing a mixture of honey with glucose shall bear an internal-revenue stamp, showing that the contents of the package are a mixture of glucose. The tax need not exceed a cent on each and every package. What we want is the stamp *in plain evidence*. If we are to depend upon men like Mr. Abbott, we shall never see it there.

Murphy's, Cal., March 8.

[It has been our practice to recommend hunting up the ants' nests, and destroying them, the source of all the trouble; but in California this may not be practicable, and, moreover, the nest may be inaccessible, or, to coin a word, not "findable." Certain red ants, very small ones, in this country have a fashion of making a way into the pantries of the housewives; and it is sometimes very difficult if not impossible to find their nests. Giving them a mixture of syrup and any one of the poisons you name, would probably "fix 'em"—the visitors as well as their baby brothers and sisters. It would be well worth trying, anyhow.

I said it was our recommendation to find the nest and destroy it. With a crowbar or sharp stick make two or three holes; and if the nest is a large one make three or four through the nest about a foot deep. Into each hole pour about a tablespoonful of bisulphide of carbon, then stop each hole with a plug of earth. In a day or two, not only the ants but the nest, including all the eggs and larvæ, will be "fixed" so they will do no more harm.

Hearing recently that gasoline and coal oil would answer in place of the dangerous bisulphide of carbon,—dangerous because it is so explosive—I lately tried several nests, making holes in them, but using larger quantities of coal oil in some cases and gasoline in others. Either liquid I found would destroy the nest, but not so quickly and perhaps not so surely as the bisulphide. If the holes are made a foot deep, and three or four tablespoonfuls of kerosene are put in each hole, the grass probably will not be killed. But if any of the liquids are spilled or poured on top of the nest the grass will be killed, leaving a great brown spot.

With regard to pure-food legislation, while I partly agree with you it strikes me that Mr. Abbott's method, or the plan recommended by the pure-food congress that recently met in Washington to do away with the adulterations in food, is much more practicable. We should all be very glad if the making of glucose could be prohibited absolutely. If it is used for any honest purpose, and if it is ever sold for what it is, in a retail way, then I should like to know when and where; but if we would destroy an evil, we can not always do it with one fell swoop. To attempt to prohibit its manufacture at this stage of the fight would delay legislation for years to come, as the makers of it with their millions could put up a powerful lobby that would probably kill any bill calculated to annihilate their interests.

It is much more feasible at present to pass a law that will prevent the selling of certain food stuffs except under their real names. If the bottle or package containing glucose must be labeled "glucose," there will be little demand for the article, because consumers, if they knew what they were buying, would let it alone.

Do not, for the sake of pure food just now, attempt to throw cold water on the intelligent efforts that have already been put forth. *Let us take what we can get* rather than *try* to get too much and *get nothing*.

Your scheme of requiring that a government stamp should be placed on all glucose mixtures may be all right; if so, its advocacy comes too late. Better get behind and push the ball that has already started to rolling.

If I could have my way I would have alcohol in every form wiped off the face of the earth. True, it has some legitimate and propper uses in the arts; but so far as I am concerned I could easily forego its legitimate use for the sake of forestalling absolutely the awful abuses of it; but experience teaches us that the only way to fight a gigantic evil of this kind is to cripple and curtail it little by little here and there in various ways.—Ed.]

THINGS WORTH KNOWING.

Modern Appliances vs. Old.

BY MRS. A. J. BARBER.

Since the beginning of the new year I have been looking back over the nine years that I have been with the bees, and taking stock, so to speak, of the points that I have proved to my own satisfaction. I have been in the bee-business, first, because it was necessary that I should have some money-making business that I could attend to while caring for my home and family; and, second, because I loved the work, and felt sure that I could do better in it than any thing else that would not require more capital to begin with.

In the nine years I have never had a failure. Last year was a short crop. There was a long drouth, and water failed for irrigation. We had not quite 9000 lbs. of both comb and extracted honey from 130 colonies, spring count.

Now, the points that I have proved to myself are these:

That careful, patient work and management are essential to success.

That comb and extracted honey can be produced with profit from the same apiary at the same time.

That the wax and vinegar may be made to pay the cash expenses of such an apiary.

That with the exercise of a little ingenuity and forethought two apiaries of from 150 to 200 colonies of bees can be managed by a woman and a little boy, with but very little other help except in hive-making or nailing up fixtures.

That one who makes a business of bee-keeping should take all the best bee-papers and keep up with the times.

That the person who depends on luck generally has bad luck.

I have proved, in an experience of six years as inspector of bees for this county, that the treatment of foul brood can not be made too thorough, and that the best use to make of honey from infected colonies is to burn it or bury it very deeply.

I have also settled the hive question, for myself at least. The eight-frame Dovetailed is my choice. I have followed the Roots, and have adopted all their improvements but the new supers and plain sections. I am still using the supers, sections, and section-holders that were the latest thing in 1890, when I began bee-keeping.

I have not a fault to find with them since I tried the new super springs and the new slotted separators on 100 supers last year. I liked them so well that I have forgiven the Root Co. for shortening the end-bars of the Hoffman frames, and have ordered enough springs and separators to fit up 400 supers. After all, though, the short end-bars are all right in the Root hives. I have had trouble with them, however, in home-made hives, especially when the "boss" didn't get the exact measurement and got some of the hives a trifle too long. I have not tried the new plain section yet, but I do like the new slatted separators to be used with the old-style sections, and I believe the fences and plain sections must be fine. When one is fitted with an outfit for the old style for 200 colonies he can afford to wait a little before changing so many super fixtures.

There may be a few other things that I have learned, but I don't happen to think of them now. The first year or two that I kept bees I could have written several large books; but after a few years of hard work and dearly bought experience I can put all my knowledge into a few pages.

Mancos, Col., Jan. 8.

CHEMICAL IMPREGNATION OF EGGS QUESTIONED.

Germ and Sperm Cells.

BY A. J. COOK.

Dear Mr. Root:—As I am waiting here at the opening of a farmers' institute I answer your inquiry regarding Mr. Crane's reference to chemical impregnation of eggs. I have seen the report that Prof. Loeb, of Chicago University, has caused the eggs of a sea-urchin, which have never known the presence of sperm-cells, to develop by adding magnesium. This needs confirmation, and I await further evidence. I do not feel that the news will necessarily be revolutionary, even if authentically confirmed. The egg is a cell; likewise the spermatozoan is a cell. So we designate them as the germ and sperm cells. Usually the nucleus of each, or parts of these, unite and become one before development takes place. The lowest branch of animals—*Protozoa*—consist of a single cell, and so are essentially like the egg or sperm cell. They reproduce, as you well know, by division, just as the egg divides in the morula stage. Often two of these animals unite for a time preceding reproduction. This temporary union, as you know, we call conjugation. In this process, which we see is not always precedent to reproduction, but which often occurs, doubtless interchange of protoplasm occurs. This doubtless stimulates vigor and the reproductive act. Every bee-keeper conversant with the Dzierzon theory knows that, while most eggs require that the sperm-cell shall enter the egg, and its nucleus become massed with the pro-nucleus of the egg, to insure development, this is not true of eggs that are to produce drones. In this and all cases of parthenogenesis, or agamic reproduction, eggs develop without presence or vitalizing aid of the sperm-cell. Now, if these reports are true, and I will not question them until I have reason, then this is a case of parthenogenesis. If, as reported, the magnesium helps the development, or is necessary to stimulate its action, we may not wonder. Environment often starts growth, or excites new vigor. If we wound a tree, adventitious buds start or develop. May not magnesium be the irritant which causes the egg to divide or develop? Surely if a bee's eggs may develop with no external stimulation, we may not wonder overmuch if the sea-urchin egg may develop by some exciting cause, and that a chemical, like magnesium, may stimulate such unusual action.

Perris, Cal., Apr. 23.

[The suggestion about parthenogenesis (life from one parent) is very reasonable, and may account for Prof. Loeb's experiments. While I am not a scientist, my old professor of zoology used to say that science could perform wonders, but that it could not develop the principle of life, even in the remotest sense; and that man, with all his endowments, could not do what the Almighty had foreordained for himself.

Prof. Cook is not so "flat-footed" on this question as I had expected he would be; and yet, in spite of the "professional courtesy" (which, of course, is proper toward a brother-scientist), he shows very plainly that he does not believe even a little bit in the implied assumptions concerning the new discovery of Prof. Loeb.—ED.]

IMPROVING STRAINS BY SELECTIONS IN BREEDING; SOME OF MR. CRANE'S STATEMENTS QUESTIONED.

In Mr. Crane's article, page 256, he makes some statements which I wish to question. Sea-island cotton is a variety of cotton grown on the sea-coast. If the seed is taken up country, and planted, in a short time (two or three seasons) it becomes short staple again. Cotton is not an annual, but is perennial, ripening seed the first year, and is *not hardy*, so that in this country it must be planted every year.

The New York *Journal*, in one of its Sunday editions, stated that Prof. Loeb had been able, not to make unfertilized fish-spawn hatch, but that he had made one of the lowest forms of marine life develop life; this was embellished with all the words and fancies which this paper is capable of.

The Standard Dictionary says, "The carrot is any plant of the genus *Daucus*, especially any cultivated variety of *Daucus carota*, *L.*, a biennial which in the wild state is a widely naturalized, noxious weed with a white root." Gray's Manual of Botany says, "Daucus Carota, L., biennial." What Vilmorin did do was to change the form of the root by selection.

I do not think Mr. Crane needs to twist the facts, for he has in selection all that is needed to give him grounds for argument. I firmly believe that a strain of bees in which the swarming instinct will be *latent* is one of the things bee-keepers will soon be able to produce.

I must say that the incubating instinct has not been *eradicated* at all in any variety of gallinaceous birds, for I can produce a strain of sitting fowls in a few years from any non-sitting variety Mr. Crane may select, thus showing that the instinct is latent, not eradicated.

We can modify bad traits and intensify good ones by proper handling, and do not need more than this to give us all we desire in this line.

In conclusion, I wish to thank Mr. Crane for his able article, and, with the exceptions noted above, wish him to count me on his side. L. F. HIORNS.

Scranton, Pa.

SELLING HONEY.

Maintaining the Present Prices.

BY E. B. FOSTER.

During the past season I was very forcibly brought to realize the urgent necessity of a "trust" in my locality—I mean a "bee-keepers' trust;" so in anticipation of the coming honey harvest I have written a letter to each leading bee-keeper residing in my neighborhood. After doing so it struck me as being an idea that might be beneficial to the fraternity at large. So I give the aforesaid letter to the readers of GLEANINGS. The following is the letter, which I shortened as circumstances would permit. The letter explains itself.

> *Mr. Bee-keeper*:—I take this means of laying before you a matter of much importance and interest to you, which I trust you will carefully consider. The present indications are such that we can look for some surplus honey this season. Now, the vital question that confronts us will be the converting of that honey into the largest possible amount of cash. You no doubt have observed the steady advance in price of nearly all articles we consumers have to buy; you are also aware that the honey quotations rule about 20 per cent higher than last year. Why not maintain the present price of honey by combining our interests and holding out for the advanced price, thereby causing that which we have to sell to compare favorably in price with that which we have to buy. The only way we can accomplish the desired result is not to sell our honey for less than the present price, and prevail upon our neighboring bee-keepers to do likewise. As an illustration: A farmer bee-keeper, a year ago, had some dark and travel-stained comb honey which he disposed of at a price that enabled the grocer to whom he sold it to put a glaring advertisement in the local paper, "New comb honey, 8c per lb." That "8 cts. per lb." was a criterion the rest of the season. Every customer whom you told that you were asking 15c per 1-lb. section would say, "Why, I can buy honey at the grocery store for 8c." You know the result. While you were not asking more for your fancy white article in nice clean sections than it was worth, you were compelled, nevertheless, to lower your price to meet the values created by that one inferior batch of honey that some thoughtless or ignorant keeper of bees had placed on the market. Our customers do not realize the difference in honey as they do the difference in price.

Now, if some of the neighbor bee-keepers had called upon the above gentleman and explained to him the harm that would result from his cheap honey, he no doubt could have been influenced to either use the honey himself or dispose of it to some private person who would not have advertised the fact that *there was honey selling for 8 cts. per lb.*; or we could have gone together and bought his crop of honey, and used it to feed our bees. We should be on the lookout for those short-sighted bee-keepers; and when they are ready to sell their crop of honey we should see that they put it in marketable shape, and that they demand a price for it that is consistent with the best interests of the bee-keeping fraternity. It would be better if all bees belonging to these slovenly keepers could be confiscated and placed in the possession of an owner who takes pride, not only in the bees, but in their product. It would then not be necessary for the producers of fancy honey to compete with a grade of comb honey which the grocer can buy for 5 and 6 cts. per lb , and retail at 8. The average consumer has the idea that the bee-keeper can sell honey cheaper than the storekeeper; and when the bee-keeper asks a few cents per pound more, they have a grievance which no amount of diplomacy, argument, or proofs can satisfy. The only chance the bee-keeper has for "squaring" himself is by compromising on a reduction in the price of his honey. The general run of consumers think one cent on a pound of honey ought to make a big difference in the quality of the same; and when there is honey selling for 8 cts. per lb. they believe that 9 cts. ought to purchase a pound of the best honey the market affords.

I have found it difficult to sell honey to consumers for more than what it was retailing for at the store. We must also see our grocer and have him co operate with us if we expect to attain the very best results in keeping up the price of honey. The grocer can lend us much material aid in the maintenance of present prices.

Allow me again to mention the prime necessity of united action on our part as leading bee-keepers. It is to our own personal interest to do all we can to uphold the present prices of honey. Call on your neighbor bee-owners, and "talk it over" with them; show them what a great figure they can cut in bettering the condition of the poor deserving bee-keepers of our land; work on their sympathies if you can not gain the desired result any other way. Those whom you can not see personally, write to; do all in your power to prevent the marketing of cheap honey. It is that cheap poor honey that ruins our local market for the fancy article. What is a little work or a few postage-stamps as compared with only one cent more per pound for our honey crop? Let each bee-keeper resolve himself into a committee of one, with the ostensible purpose of mantaining the present price of honey in his local market. The good results will soon become general. Our endeavors to better the price of our commodity are perfectly legitimate, and should be indorsed by every person who has honorable convictions—especially so at the present time, when the price of every thing else has grown stronger.

Oceola, O.

SHOP TALKS
BY UNCLE LISHA

DESIRABLE TRAITS IN BEES.

It was March, and one of those boisterous days that are likely to come at this season. I sometimes think our State in March is the battle-ground for the Titanic forces of winter and spring which fight here like demons to see which shall have the supremacy. Spring usually wins in the struggle, but only after many a hard-fought battle. No one wished to face the storm, and one after another dropped into my shop. Fasset brought his wife's second cousin, Charley Atkins, and even Jonas Jenkins came in to warm himself. Poor man! I felt sorry for him, he looked so forlorn. I had my work pretty well up, and we talked of sections and supers and separators till Fasset remarked, "I thought, Lisha, you were going to tell us more about how to get a breed of non-swarming bees. If it takes as long to produce a breed as it does for you to tell how, we may none of us live long enough to see them."

They all laughed a little and I began.

"We were speaking the other day of the different instincts of bees, and decided that that of propolis-gathering with improved hives was no longer needed, and should be bred out. There is another instinct that, while I do not think it desirable to breed out, should be so modified as to eliminate its more objectionable features, and that is the instinct of defending their stores. Our bees, if possible, should be gentle, or at least so as to be handled with little danger of stings. Then there is the brood-rearing instinct. This should be developed to the utmost, especially in early spring. Other things being equal, our success will depend largely on our ability to get a large amount of brood started as soon as the weather will admit in spring. And now we have the honey-gathering and the swarming instincts, and these are contrary one to the other. You know we have appetites and desires in our own natures that are contrary."

"That is so," said the deacon. "If I know my own heart, I want to do what is right; but sometimes my temper gets the better of me, and I say and do things I ought not."

"I fear we all do," said I, trying to comfort him. "You know St. Paul said, 'What I do, that I hate;' and I have wished the bees had the instinct of honey-gathering strong enough to keep them right in the line of storing honey, but they haven't. In hundreds of instances, and I don't know but thousands, the first indications of swarming will be a weakening of the honey-gathering instinct, and the swarming instinct becoming stronger, untill almost every bee in the hive will leave, without a tear, the brood they have nursed so tenderly and the honey they have stored so laboriously, and away they go as merry as a marriage-bell, leaving it all for ever behind them."

"It's curious," said Fasset.

"Yes, it is curious, and provoking too," said I. "Just when you get a colony nicely at work in the sections to have them round them up or cap them off half finished, and then *swarm!* And if you place the swarm in a new hive without foundation or old combs, or with them, by the time they are again ready to store in the super the flowers are drying up, and you have your labor for your pains. This is not the case with every colony or in every season, but far too often. And then there is the loss of time in preparing to swarm. I suppose hundreds of non-swarming hives and devices have been invented, and many of them patented, to prevent just this state of things; but so far the most or all of them have proved a delusion and a snare."

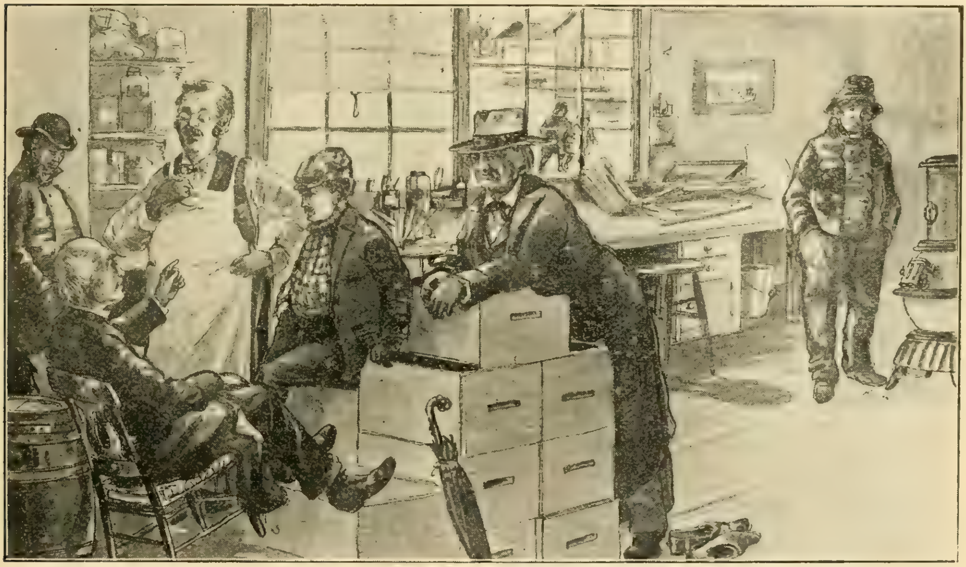
"But what are you going to do about it?" inquired Charley Atkins.

"Just this," I replied. "I am going to develop the honey-gathering and comb-building instincts to the utmost by using only queens for queen-rearing from the best honey-producing stocks, selecting from year to year with the utmost care; and then I am going to stunt, dwarf, and make abortive the swarming instinct in every possible way, especially by using for rearing my queens only queens with weakened swarming instincts. I tell you, my friends, it can be done. Even colonies with the normal swarming instinct can be kept very largely from swarming by stimulating to the utmost their honey-gathering instinct. Many years ago I constructed quite a large number of hives, rather tall, long, and quite narrow, and when clover came I placed a large number of boxes on each side, and, if strong, on top also. The hives being very narrow stimulated the bees to build out at the sides, and store with honey; and bees in such hives did not swarm half as much as in the ordinary Langstroth hive. I should have kept on using them, but they were not adapted to sections, so I changed. This I conceive to be the real reason why the free use of the extractor prevents swarming. It stimulates honey gathering to the utmost, and the swarming instinct is overbalanced and almost obliterated. It would not be surprising if our best non-swarming strains were to come from bees that have long been run for extracted honey. I was talking not long ago with one of the most enterprising bee-keepers of our State, who has hundreds of colonies. He told how he had bought queens from a number of queen-breeders. Some had been quite worthless, while others were valuable. From one breeder he thought he had the best working bees in his yards. He had introduced several of these queens, which had proved the most industrious bees he had. 'How about swarming?' I inquired. He said he had never, if I remember rightly, had a hive of these bees swarm. I wrote to the breeder in regard to them. He wrote me that these queens were bred from his famous honey-queen, now two years old, etc. This shows how that, even in storing honey in sections, the honey-gathering and comb-building instincts may overshadow the swarming propensity. One more illustration.

"In the January 1st issue of GLEANINGS, page 12, is an article by J. F. McIntyre to which I would call your attention. Mr. M. is known from Boston to the Golden Gate, and from Manitoba to the Gulf, as one of the most extensive bee-keepers on the Pacific slope, and his word I believe above reproach. The article referred to shows his candor. He says he has a strain of bees that have shown marked superiority for several years, far surpassing in honey-gathering all other strains of bees among hundreds of colonies. He has kept breeding from the best."

"How about swarming?" inquired Deacon Strong.

"I will quote his own words. He says, 'This strain does not swarm half as much as any other strain in my apiary.'"



"WE TALKED SECTIONS, SUPERS, AND SEPARATORS."

"Then," said the deacon, "I don't see but he has a non-swarming breed of bees half formed already."

"Hurrah for the nucleus of a new breed of non-swarming bees," said Charley Atkins; and he lifted his hat as if to salute it.

"A breed in the pupa state," said Fasset, with a preceptible brightening of his eyes.

"I don't care how you put it, or what you call it. It is something any way, and something in the right direction," said I.

"Probably it is not even new, but it has been recognized, and that means a good deal. Probably there are many strains just as good in this country, if we only knew where to look for them. The discovery of these facts has given me great pleasure. See what it means to me. I keep 500 colonies to gather the honey in the range or fields that I occupy. With such bees, 400 colonies would gather it just as well, and save me what it would cost to keep 100 colonies, which would be 6000 or 7000 lbs. of honey yearly, which could be sold for enough to net me $500 or more above all expense. And then I should be saved the labor of caring for 100 colonies. With 500 colonies of hybrids I should have in a good year, say, 475 colonies that would try to swarm; while with this better strain, probably not over 200 colonies would have prepared to swarm—a saving in labor more easily imagined than described.

"But another and most important fact is this: If breeding bees for productiveness of honey alone has, in a few years, reduced the disposition to swarm a half, is it at all doubtful what the result will be if he keeps on with an eye to non swarming as well? Indeed, I consider the problem as good as settled, although the complete accomplishment may be a little delayed."

"Is there any thing parallel to this in nature?" asked Deacon Strong.

"Not exactly, so far as I know," I replied. "There are, however, different ways of directing vital energy. We have spoken of that of fowls. They may expend their energy in incubating and the rearing of chickens, or egg-laying. A cow, if not in milk, may lay a large amount of fat on her ribs and between her muscles; or if in milk, a large amount of vitality may be spent in producing that useful fluid. A single cow has been known in this country to produce more than a thousand pounds of butter in a single year; but these are not exactly analagous to diverting the vitality of a colony of bees from establishing new colonies into the production of surplus honey, but useful as side-lights."

The mention of cows set Esquire Fullam to thinking and talking.

"Yes," said he, "that is so. There was Signal's Lilly Flag that produced 1047 lbs. in a twelve month. We have not been slow to see the value of improved dairy stock here in our State, and, too, we have the proud distinction of knowing to-day that the yield of butter per cow here is larger than in any other State in the Union. We raise more corn to the acre, too, and more maple sugar to the tree. Yes, sir; not another State produces so much maple sugar as ours Our mountain forests and mountain pastures and river bottoms are the glory and— " but the excessively exhilarating effects of our air set him to coughing, and he subsided, and we shall never know the rest, as at this moment Johnnie Fasset and his sister came in to call their father to dinner.

We had been so busy talking and discussing the deep problems of bee culture that none of us had noticed how fast the time had fled, or that the sky had cleared and the wind had quieted and the snow was melting about the shop door. Johnnie was seven and his sister four years old—bright and fair.

"Them's beautiful children," said Jonas Jenkins. "They sort o' lift one's thoughts up like."

"Of such is the kingdom of heaven," said Deacon Strong.

"I must tell you what I saw last spring," said I. "It was Sunday evening. I was going by Fasset's on my way to prayer-meeting, and the children were out under an apple-tree just in bloom. Johnnie was in a hammock, and his sister was sitting near by in an old rocking-chair, curling dandelion stems, and they were playing Sunday-school. As I passed I heard him ask her, 'What will become of good folks when they die?' 'They will all go to heaven,' she replied. 'And what will become of bad folks when they die?' he again questioned. 'They will all be spanked,' she answered thoughtfully."

CONVERSATIONS WITH DOOLITTLE.

DRONE COMB.

On my way home from the out-apiary last evening I met Mr. Charles Brown, a man who has kept bees in a small way for some years, and who is now about to establish quite an apiary by taking bees on shares, and making hives for another bee-keeper, trading the hives for bees, the apiary to be located a short mile and a half from me. Among other things we talked about was that of having too much drone comb built by the bees; and as this drone-comb problem is one that confronts many a beginner, I will give something of our conversation, as nearly as I can remember it. Mr. B. does not feel like buying much comb foundation and wishes to get his hives filled with worker combs without the use of it, so "fires" at me this question first.

"What makes bees build so much drone comb, any way?"

"All observing apiarists know that, as the day of swarming draws near, the queen ceases her prolificness, so as to be able to fly and go with the swarm, so that, when swarming occurs, said queen is scarcely larger than a virgin queen. Nature has so ordained things for two reasons; the first of which is, that the queen may fly; for, if taken from the hive or colony when no such preparation has been made, she can not fly at all, as she is so heavy with eggs."

"Yes, I know that to be a fact; for only to-day, in trying to catch a queen to clip her wing, I was so nervous that I got clumsy, and knocked the queen off the comb. I expected to see her fly away; but, instead, she, trying to fly, sank down to the ground. She made two or three more efforts to fly, but could not rise, so I held the comb of bees down and she ran on it, when I finally succeeded in getting her and clipping her wing. But what about the second reason?"

"The second reason is that the queen need not be damaged by an over-accumulation of eggs before there is time for the bees to construct combs in their new home for her to deposit eggs in. For these reasons we find that all good queens do not become fully prolific again until about a week has elapsed after any swarm is established in its new home."

"Well, what has all this to do with the building of drone comb?"

"During this week comb has been built rapidly, especially if honey is coming in plentifully; while, for the reasons given, the queen has not been able to keep up with the workers in filling the comb built with eggs, the result of which is that the bees commence to build store comb, which is of the drone size of cell."

"But when filled with honey there can be no drones reared in it!"

"Correct; but the trouble comes the next spring when the combs are emptied of honey. Only a year or two ago I saw hives in a neighboring apiary nearly half filled with drone comb where good laying queens went out and were hived with the swarms."

"Why do you bring in that 'good laying' part?"

"Because some seem to think that no drone comb is built under any circumstances unless the queen is old or beginning to fail. By inquiry I found that the swarms were hived a full week before the surplus arrangement was put on, this making it necessary for the bees to do all their work in the hive during the time before the queen could get back to her full prolificness again. In these reasons I have given what causes the bees to build drone comb for the majority of bee-keepers."

"But how is such a state of affairs to be avoided?"

"The way I manage is to give new swarms which are to build comb, a brood-chamber of only about half the size of the one from which the swarm came, this smaller size being made by contracting it with dummies, while a part of the surplus for section honey is placed over the frames at the time of hiving. Some of the sections in the surplus arrangement should be partly filled with comb left over from the season previous, so as to start work in the sections at the same time the bees start below. This causes the bees to store honey above while they build comb more slowly below, building only as fast as the prolificness of the queen demands it."

"Do you keep the swarm all of the season in this contracted brood-nest?"

"No. As the queen's ability for laying increases, more frames are added, so that at the end of the season I have the hive filled, or very nearly so, with nice worker comb, and secure lots of section honey. By this plan I secure three important items—much section honey, very little drone comb, and a hive filled with nice straight worker comb, the latter costing less, in my estimation, than it would to buy the foundation, wire the frames, and fit the foundation into them."

"Do you think I could succeed by that plan?"

"I know nothing why you can not, and I hope you will try it the coming season, on a few swarms at least; for if it works as well with you as it does with me, it will be quite a saving to you, both in vexation and in not rearing a host of useless drones to eat up the early honey which the industrious little workers gather."

"Do you treat after-swarms having virgin queens in the same way?"

"No, this does not apply to such swarms, for there seems to be no disposition with them to build drone comb, unless the swarm should be an exceedingly large one. All swarms or colonies having a young queen just commencing to lay rarely ever build any drone comb the same season; nor will the young queen in the parent colony lay any eggs in the drone comb in the hive already built; because when an old colony has a young laying queen after a swarm has issued, instinct teaches them that they may expect this queen to meet all of the requirements of a mother-bee for the rest of the season, and drones are necessary only when a change of mothers is contemplated."

"Why, will not such colonies build nice worker comb then?"

"They will, and I often take advantage of this fact, and manage to get one or two nice perfect worker combs built for future use while the bees of these colonies are at work vigorously in the sections, by taking one or two full combs out of the center of the brood-nest of colonies having such queens, and inserting empty frames in their places."

"But doesn't it detract from the honey crop?"

"These frames are filled, apparently, without the cost of any section honey, while it seems to give great energy to the colony so building comb. The combs thus secured, and any which I may secure from any nuclei or weak colonies which are too weak to work in sections advantageously, are carefully kept for the next season, when they can be used to fill out the hives of any swarms whose queens may not be of sufficient prolificness to cause the bees to fill out completely the whole number of frames given with full combs having the worker size of cells. Plenty of frames filled with worker combs are something prized by any apiarist. But I must be going, as it is getting dark."

HEADS OF GRAIN FROM DIFFERENT FIELDS.

[I solicit questions for this department; but they must be put on separate slips of paper, and marked "GLEANINGS Department." If you desire an immediate answer, say so at the time of writing, and a private reply will be sent you in advance before your question with answer appears in these columns; but questions that are mixed up with business matters will not only be subject to considerable delay, but possibly will receive no answer at all.—EDITOR.]

THE OLD STYLE A. I. ROOT CHAFF HIVE; A. I. R. HIMSELF HAS SOMETHING TO SAY IN REGARD TO BEE-KEEPING AND WHAT KIND OF HIVES TO USE.

The A. I. Root Co.:—I have just noticed in May 1st GLEANINGS your apiary. I see you still have some of the A. I. Root chaff hives of a few years ago. Don't tell A. I. that I think they are the best hives ever got up for comb honey. When I had them in my yards I got quite a crop of honey every year. Since I began using the eight-frame Dovetailed my honey has not materialized as it did with the A. I. Root chaff hives. The hives as then made were warmer in the supers, as there were no openings between supers, and the sides were protected. I feel that the eight-frame hive has had considerable to do with our small honey crops for the last few years. If a bee-keeper wants comb honey, I think the chaff hives are *the* hives.

F. A. SALISBURY.

Syracuse, N. Y., May 7.

[I have just instructed our stenographer to get this in before Ernest sees it or adds any footnote to it, if he can. It is just what I thought years ago, and it is what I still think, judging from the reports that come in. There may be hives *as good* for wintering as the old chaff hive, but I do not think there are any very much better; and when it comes to wintering and summering, protecting the bees from both heat and cold, and sudden changes, it seems to me the chaff hive is the thing. Whenever I see reports in regard to wintering, where chaff hives are contrasted with other hives, it looks to me as if the chaff hives always come out ahead. Friend Salisbury, here is my hand, and I wish to congratulate you on your sound, mature good sense and observation. Of course, the eight-frame hive is a fine thing where bees are to be moved to out-apiaries and back again. It is a fine thing where bees are to be shipped, or, perhaps, we may add, offered for sale. It is a fine thing for queen-rearing, where you do not wish to bother with smaller nuclei that are liable to run short of stores; and I think I would have both the eight-frame hives and also the chaff hives in every well-appointed apiary. But when it comes to wintering here in the North, I would double up, saving my best queens, and have every colony in an old-fashioned Root chaff hive.—A. I. R.]

WILL BEES CARRY HONEY DOWN FROM THE UPPER STORY? CONDITIONS FAVORABLE FOR SWARMING.

Mr. Root:—I wish to ask a few simple questions which I fail to find in your A B C book.

1. I winter my bees on summer stands, and I wish to know whether, if I leave my honey-boards on top of the first story, the bees will carry down honey from the upper story provided they run short below, or will they be liable to suffer, or allow the queen to suffer, during some cold snap?

2. Will bees be as apt to swarm with the honey-board over the first story of an eight-frame Dovetailed hive with one five-inch super on top as they would provided the honey-board were left off, and allow the queen to go into the super too?

3. Can I make it pay me to invest money in bees when I have only about five to six weeks' honey-flow from poplar and linn that furnishes the bees a good chance to gather honey?

Kings Creek, Ky. DR. M. FIELDS.

[1. Bees will not, as a rule, carry honey down from the upper story to the lower; but in any case the bees would not starve as long as they could get at something above. The cluster would be more likely to desert the lower part of the hive, and go into the upper where the honey is.

2. In speaking of a honey-board I assume that you mean one using perforated zinc. As a general rule, we may say that the more limited the quarters for the queen for egg-laying, the more inclined the bees will be to swarm. If she could have access to the super as well as to the brood-nest the bees might delay their swarming — perhaps not swarm at all. But I should never think of letting a queen go into a comb-honey super. If you wish to cut down swarming, give the bees an extra brood-nest, and let the queen have access to both stories. But unless the honey-flow is liable to continue for five or six weeks, part of the time from basswood, you had better keep the bees confined to one brood-nest, and let them swarm if they will.

3. Yes, I think you could. Some bee-keepers make it pay when they have a flow of only two or three weeks. A good deal depends, however, on how much of a flow there is during the time.—ED.]

HOW TO SEND QUEENS BY EXPRESS.

A party residing in Fingal, Ont., Canada, who used to own an apiary here, which, in its transfer to other parties' hands, has made as a stipulation in settlement by one of the parties through whose hands part of the bees have passed, that in part settlement for obligations incurred, said party shall deliver at Fingal, Ont., Canada, five queens together with 200 (or 250) bees with each queen. What dimensions and specification for the right kind of shipping-cage will meet this case with fair chance of getting queens and bees delivered with success? RUSSELL J. HALL.

Craftonville, Cal.

[If it is required that there should be not less than 200 bees in each package with queen, the shipments would have to go by express. In that case I would recommend a beeway section having combs attached all around on the four sides, and partly filled with honey. The section should be placed in a little box just large enough to receive it. A queen with 200 bees could then very easily be accommodated, and yet the package would be light enough to go at comparatively small expense. The inclosing box or case that contains the section should have two ventilating holes ½ or ¾ in. in diameter, covered with wire cloth on the inside. The five packages should then be put in one crate, and the whole sent by express. It would be far cheaper to send the queens by mail in the regulation cages, and run the chances of being compelled to replace one that might die in the mails. If queens were taken direct from the hive, and mailed the same day, the whole five ought to go through alive in good order. But the packages by express would make small nuclei; and, if given proper feeding and time, would make colonies.—ED.]

STRENGTHENING WEAK COLONIES AT THE EXPENSE OF THE STRONG.

I have a colony of bees that is not as strong as I should like them to be. I do not want to unite them with one of the other colonies, for they are strong enough. They are in old Langstroth hives and the combs are built in all directions, so I can not give the weak colony a frame of brood. Do you think I could take the first swarm this spring and put it in with the weak colony if I were to kill one of the queens? E. SCHWARZTRAUBER.

Greenbush, O., May 9.

[It is generally regarded as bad practice to push ahead all weak colonies at the expense of the normal or strong ones. Your better way would be to leave it just as it is; and while you probably can not make it strong enough to gather much honey, you can get it into good condition for winter so that it will be strong and vigorous a year hence. To take brood away from another colony would hurt that colony far more than it would benefit the one to which it was given. In other words, you will get more honey in the end if both colonies are left as they are. If you should happen to have a stray swarm come, hive it with this weak colony, but be sure to cage the queen already in the hive, and destroy the one that came with the swarm if she is inferior to the one caged.—ED.]

WILL ABSCONDING SWARMS RETURN?

I see in Questions and Answers, in *American Bee Journal*, that Dr. C. C. Miller seems to think an absconding swarm will not return. My neighbor, Madison Duke, had one return several years ago, and June 12th of last year I had a swarm issue at half-past 9, and stayed until 1, and then vamoosed for the wilderness, my wife watching them. At 3 o'clock I returned home, and at 5 o'clock I heard and saw them return, and know that they were mine, as they came back in the exact line they went away in, and, furthermore, I am the only one who has Italians in this section. Therefore I think they could not find a place, and thought best to return. J. H. ALLEN.

[Dr. Miller replies :]

While the circumstantial evidences are strong, they are not entirely conclusive. There still remains the possibility that on the morning of June 12 a colony of Italians miles away may have swarmed, the swarm entering Mr. Allen's hive on the afternoon of the same day.

HOW TO GET A SWARM FROM AN INACCESSIBLE POSITION.

Once, after a very mild winter, with the bees in an apple-orchard, there were numerous swarms in March. They invariably pitched on the body of the tree, near the ground. There was no foliage on the trees. I had trouble, in the ordinary way, to get them into the hive. I took a frame of eggs and brood in all stages, and tied it to a limb so it would hang against the bees. In a very short time I found the queen on it. I put it in the hive, and the bees all quickly entered. After that, whether the swarm was in a difficult place or not, I put against it such a frame, and the queen invariably got on to it in a very short time, and there was no trouble in hiving the bees. Sometimes I would use a pole to elevate the frame to the place where the swarm was. By this method I found hiving easy. J. W. JACKSON.

Opelousas, La.

[I have practiced the plan you speak of many times, and it works well. It is the only satisfactory way to get a swarm out of a crotch or off from a trunk of a tree.—ED.]

IS THERE DANGER OF OVERHEATING HONEY SURROUNDED BY WATER?

Mr. Root:—You say, page 305, about damaging honey in liquefying, "No danger of overheating unless the can is put right on the stove." Now, I think you had better try it and see. Michigan honey can be ruined, even when heated in water, both in color and flavor, mostly in flavor. I am not acquainted with Mr. Fowls, but I judge he has had experience in this line.

Otsego, Mich. O. H. TOWNSEND.

[I guess you are right—yes, I know you are. On second thought I know there is danger of overheating honey in water. We have for years cautioned against heating candied honey higher than 180 degrees F., because experience has shown us that when it is brought to a higher temperature, the honey is likely to be darkened in color, and injured slightly in flavor. I am sorry to be obliged to confess error, as I know my friend Mr. Fowls will chuckle over it not a little. Spores can stand a continued boiling temperature of from two to three hours, while the actual bacilli—those hatched from the spores—will probably be killed immediately in boiling water. It is evident that there has been confusion in the minds of a good many on this matter of spores and bacilli.—ED.]

GETTING DOOLITTLE QUEEN-CUPS ACCEPTED WITHOUT ROYAL JELLY.

Mr. Editor:—We have been raising young queens this spring. The other day, when we got ready to put the larvæ in the queen-cups we found we had no queen-cells and no royal jelly, so we took a frame of unsealed drone comb and removed the larvæ, and procured enough jelly from two or three larvæ for each queen-cup; and to-day I looked at the frame and found eleven capped over.

WHY DID THE SWARM DECAMP?

On the 16th day of April I found a very large swarm clustered on a tree, and hived them in a ten-frame hive with inch starters only. The next day I looked at them, and they were working away lively. I thought they were all right; but on the 18th I noticed there were very few bees flying, and I opened them up to see what was the matter, and found they had decamped, leaving only about half a pint of bees; but the mystery was that, on opposite sides of the hive, they had built a nice lot of worker comb as large as my two hands, and in each were a few eggs. What was the matter? E. B. BEECHER.

Auburn, Cal., April 21.

[Yes, you *can* get the bees to build queen-cells from Doolittle cups supplied with only ordinary food from worker-cells; but as a general rule a much larger percentage of cells so supplied are liable to be rejected by the bees; and in all probability, too, the queens reared from a start of larval food would not be as good as those supplied with genuine royal jelly from the very beginning.

As to why swarms will sometimes leave their hives is one of the things we can not explain; but it nevertheless is not an uncommon thing for a newly hived swarm to decamp in a day or two when hived on starters or frames of foundation only. It is our practice, when hiving on foundation, to give the bees just one frame of unsealed larvæ. It is very seldom that they will desert young brood; and while the presence of it will not invariably hold them, yet it seems to be, according to our experience, quite a restrainer.—ED.]

POLLEN IN SECTIONS.

Not long ago I saw something in GLEANINGS about the probability of bees putting pollen in sections. A long time ago I learned by dear experience that when swarms were hived on starters or wired foundation, and the bees were immediately given partly filled sections, brood would often, and pollen almost always, be put in the sections. Queen-excluders will keep out the brood, but not always the pollen. With a set of empty combs, or even two or three, with the starters, the pollen would be left in the brood-chamber. The plan of putting a few combs with the starters, or frames of foundation, is objectionable, as the bees are very apt to bulge them into the adjoining frames, thus making combs of very uneven thickness; so I adopted the plan of putting sections of foundation or starters on newly hived swarms, and, after a few days, when combs had been built, the partly filled sections were moved from the parent hive to the new one.

South Haven, Mich. H. D. Burrel.

[There is no doubt that in some localities (perhaps in the majority of them), when bees are hived on starters, and the queen confined below by a perforated zinc honey-board, pollen would be crowded up into the sections; but in telling how you remedy the trouble, either you do not say what you mean or else I do not understand you. You speak about putting the sections of foundation on "newly hived swarms," and then you tell about moving the sections from the parent hive to the swarm. Don't you mean that the sections are put on the parent hive in the first place, and *then* when the swarm has got its starters or foundation drawn out in the brood-nest sufficiently to catch all the pollen, you then put on the sections which are now on the parent hive?—Ed.]

A FRAME OF UNSEALED LARVÆ TO HOLD A SWARM.

Once I had a swarm of bees alight. I hived it. The next day it swarmed again. I hived it. The following day it swarmed the third time; then it occurred to me that its queen might be a virgin, and, in going out to seek a drone, the bees followed because they had no means of replacing her if she failed to return. I then put in the hive a frame of eggs and brood in all stages from a colony I was willing to raise a queen from, and hived them again. I had no further trouble with it. Afterward I always, in hiving a swarm, put in the hive such a frame, and never had any more re-swarming. J. W. Jackson.

Opelousas, La.

[Your experience is quite in line with our own, and we have recommended, when hiving, to give a frame of young brood, especially if the swarm is hived on foundation.—Ed.]

"FLORIDA WHITE;" CAN 3000 COLONIES BE SUPPORTED IN ANY LOCATION?

Away up here in Western Florida is a bee country you hear little about. The present season we began with 200 colonies, and to-day have our extracting-supers three deep on many of the hives, and none but that have two on. On our hives devoted to comb honey we have supers three deep, but are removing those that are filled, and putting on empties. Tupelo is the main source from which our surplus comes, and the main flow will not be here for ten days.

Ernest, you speak of no place in the world that will support 3000 colonies of bees. Perhaps there is not; but I will bet you a penny that I can keep 3000 colonies of bees here on a paying basis, and not have an out-apiary more than 15 miles from home. Buyers are very anxious to get our honey. We don't have any "Southern strained." It is "*Florida white*." M. W. Shepherd.

Marchant, Fla., Apr. 12.

[You must have a fine location, and we here in the North envy you such big averages per colony.

With regard to 3000 colonies, you misunderstand me. There are localities already that have that number within a radius of 15 miles, some of them in the United States. What I meant was that there could not be 3000 in one apiary, so to speak, or, we will say, within a radius of half a mile. The newspaper article, if I remember correctly, reported that there were 3000 in one place in California, and this I regarded as a fake newspaper yarn.—Ed.]

CONTRACTION; ITS ADVANTAGES AND DISADVANTAGES.

It has appeared to me that by using only five frames in the eight-frame hive, and dummies on each side, I get more honey in my supers. Is this reasonable, or do you suppose it depended on special conditions at the time I tried it? Chas. A. Peple.

Richmond, Va., May 11.

[The practice of using only five frames in an eight-frame brood-nest, and filling up the space with dummies for the purpose of forcing what honey does come in into the supers, is called "contraction." This was extensively practiced a few years ago, but is now generally abandoned. It is far better to have the colonies so strong that, when the first honey comes, it will be rushed right into the supers. It is better to use a full-sized brood-nest than to putter away with weak colonies with a contracted brood-nest. But if the honey-flow is short, and colonies are not overly strong, then contraction may be practiced sometimes to advantage. But in this case it will be necessary to watch closely for swarms, as contraction has quite a tendency to encourage the swarming propensity, because the bees seem to need more room for brood-rearing.—Ed.]

1. How much drone comb should bees have in their brood-nest?

2. How can I put up chunk honey here in the South to prevent the moths from destroying it? August Pfeffer.

Kenney, Texas.

[1. This depends on whether you desire to rear queens If not, the fewer drone-cells in the hive the better. In any case I would make an effort to have worker comb in all hives except where there were breeding queens. To such we sometimes give a whole frame of drone comb, just for the purpose of getting choice drones.

2. If the chunks of comb honey are swimming in, or are fairly covered with good extracted, putting the whole, immediately after it came from the hives, in pails with covers,

ought to protect it from the ravages of the moth; but if there is a great deal of chunk honey, and a small amount of extracted, there might be some danger.—Ed.]

I should like a discussion in Gleanings in regard to strainers for honey, and prevention of swarming in our yards. C. R. Morts.

Mohawk, N. Y.

[One of the best honey-strainers—perhaps the best—is illustrated and described by Rambler, in Gleanings for Sept. 15th, page 683, last year. For prevention of swarming, see our March 15th issue, pages 218 and 219.—Ed.]

Can you tell me through your columns a way, if there is one, of taking granulated honey from the comb without destroying the cell? C. H. S.

[The article on page 305, of our issue for April 15th, will give you just the information you seek.—Ed.]

Can I hive the third swarm in with the second, that comes from the same hive, successfully? T. G. Ledbetter.

Weaver Sta., Ala.

[Yes; but better, far better, prevent second swarms.—Ed.]

W. C. Townsend, Buffalo, just sold for me 9 cases, 24 in case, 216 4x5 sections, 194 lbs., net, at 15 cts., $29.10; charges $4 56—$24.54 net. Batterson & Co., 9 cases, 20 sections in case, $1 80. Sections 3⅝x5, $23.46. 3⅝ sold for 2c more per lb. than the 4x5. Honey No. 1, and same quality; these sales are much in favor of the 3⅝ sections. My Washington men say 3⅝ sells just as well as 4x5. As they fit the L. frame, let us make the 3⅝ standard. I have 500 colonies, all plain sections. F. G. Bass.

Front Royal, Va.

BEGINNERS' QUESTION BOX

BY E. R. ROOT.

F. R. S., La.—Albino bees and queens look the same as Italian except that the rings of fuzz or hair are always white instead of a grayish dark color. They are nothing more nor less than sports from Italian stock.

M. C., Fla.—The mosquito-hawk, or dragon-fly, as they are sometimes called, may be easily scared away or brought down by boys with whips, or at least that is what Prof. Cook recommends in his book. While they prey upon bees to some extent, it is not generally considered that they do any great damage.

J. A. M., Pa.—Specimens of bees you send are those that died from bee-paralysis. I know of no cure for the disease. If the colony is very badly infected, for the sake of the others you had better burn hives, bees, and all, as the disease is mildly contagious. If you can not afford to do this, put the hive or hives of bees containing this disease in a location at least two or three miles away from your bees and others. Destroy the queens, and then introduce queens from healthy stock.

A. D. W., Va.—Bee-veils with celluloid and glass fronts are described in our A B C of Bee Culture; but in comparison with the silk tulle, so far as clearness of vision is concerned they are little if any better, much more expensive, and, on account of their weight, are not apt to hang straight, but will flop back and forth at every movement of the apiarist. The glass, moreover, is liable to break, and get covered with moisture from the breath, to say nothing of getting dirty. I have personally tried these devices myself, and do not consider them anywhere equal to silk tulle that is sold by the Dadants.

J. B. S., Neb.—From your letter I should judge your bees are troubled with what is known as dysentery—a very common disease or malady in early spring; but as soon as settled warm weather comes on you will find that it will disappear and give you no further trouble. Young bees carried out, which you speak of, are probably those that have come from the chilled brood, or brood chilled during the cold weather which seems to have been universal almost all over the country. There will be no danger whatever in hiving swarms or putting bees in hives in which bees have died during winter. To save combs from moth-worms, put them in an upper story on a strong colony. For further particulars on all these questions see "Bee-moth," "Spring Dwindling," and "Dysentery," in our A B C of Bee Culture.

F. M., Ohio.—I can scarcely tell you what caused the death of your bees unless it was the honey they gathered from the onions. Some kinds of honey are very destructive to bees during winter, and I should be rather of the opinion that the honey your bees gathered from the onion-plants was the cause of your loss. But with your hives and your combs filled, even with this bad honey, at this time of the year, you can make a good start. If you work it right you can have those hives full of bees, every one of them, by fall, for that dark honey would be all right for brood-rearing. Of course, if your bees died of some disease, and the germs of that disease are lurking in the honey, then of course it should not be used for spring or summer feeding. To make a new start, purchase one or two colonies of common bees; bring these home and divide them up into five or six little nuclei, giving each hive about one frame of bees. Close the entrances down to a space that two or three bees can pass through at a time. These nuclei should be given unsealed larvæ so they can raise a queen, or, better still, give them queen-cells. If you read the subjects of "Dividing" and "Artificial Swarming" in our A B C of Bee Culture you will be able to carry out this increase with very small expense; but as soon as practical we would advise you to raise queens by the Doolittle method, which you will see described in our A B C of Bee Culture.

EDITORIAL
BY
E. R. ROOT

THOSE jumbo colonies in jumbo hives are boomers; but, my! what *awful* things they are to lift! If I had to do the work alone I would try to invent some sort of derrick or lifting-machine for that purpose. All the same, I think I like them. If they won't swarm much, and will pile in the honey, I could put up with a good deal of inconvenience.

AS extensive as the revisions were in the last edition of the A B C of Bee Culture, which edition of 5000 copies will be exhausted inside of a year, the revisions for the new edition will be much more elaborate. While the work will be larger, the price will be the same. I can only suggest that prospective buyers wait till the new book is out, as it will be impossible for us to get the new edition out before the old one is exhausted.

KING BIRDS A DAMAGE IN A QUEEN-REARING APIARY.

KING BIRDS and other bee-birds are apparently making bad work in our queen-rearing operations in our home apiary. I watched the king-birds one evening, and found that one would sit on a tree, make a dive through the air, catch a bee, go back to its perch, and proceed to masticate its precious morsel. Since these birds have made such frequent visitations we have had considerable losses of young queens. As queens would be slower of flight, and larger and more conspicuous in every way than ordinary worker bees, the birds would be quite likely to single them out from the other bees. I have just bought some No. 10. nitro-powder shot-shells, and with my new Parker hammerless I propose to seek my revenge.

Experiments were made, I believe, at one experiment station, showing that the bees caught by king-birds were drones. That is to say, birds were shot, and their crops opened. But these birds, doubtless, were killed in the vicinity of apiaries making the production of honey the sole business. If king-birds select the big bees (the drones) in an ordinary *honey* apiary, I would naturally suppose they would chase up and catch *queen*-bees—those that are out on their wedding-flights in a queen-rearing yard.

Later.—I have been out with my gun several times, but have not once seen a king-bird; but I hear of their being on hand and doing a good business when I am not there.

HOW TO GET RID OF THE CROSS BEES THAT CHASE ONE ABOUT ON THE WING.

THIS afternoon, May 16, at our out-yard, in reversing bottom-boards from shallow to deep entrances I incurred the special wrath of one particular colony. I supposed I had smoked at its entrance and loosened its bottom-board, but probably had omitted to do it, by the way the rascals pitched into me. And then, to make matters worse, the bottom-board stuck and finally came loose with a snap. I did not try to "argue" the matter, but beat a hasty retreat, for there were two or three dozen mad bees clinging to my veil; and my nose (ever prominent) was holding out a portion of that thin structure. Then there were several other squads that were feeling up my sleeves, and reminding me that they had not forgotten the use of their weapons. I went off shaking my head to keep my nose from the veil, and crammed my hands in my pockets. I waited a few minutes and went back. But there were two or three dozen of those dare-devils in the air that persisted in following me, and every once in a while making a dive up my sleeves. Finally my patience was exhausted. I went to my tool-box and picked up two strips of wood about ¼ inch thick, 1½ inches wide, and a foot long. With one of these in each hand I struck right and left. But do you think I hit them? Not one. Finally an idea came to me. I then worked those strips back and forth rapidly, about as one would work a fan before the face on a hot day, and, presto! how their little bodies did flip, crack, bang, and whack! By keeping up a continuous whirring motion of the two little strips of wood before my face, and without making any effort to hit any particular bee, I succeeded in killing every one of them in much less time than it takes to say it, and, oh what a relief!

You see, the point is here: A rapid whirring movement back and forth excites their fury all the more. They make a dive for the moving objects, with the result that they get their heads cracked, and down they fall into the grass, right and left. If one were to strike at one bee on the wing it would not be there, of course, by the time the blow was delivered.

I verily believe that, if I had tried this act when in Coggshall's yards, when he was performing "the kick-off-super act," I could have killed a thousand bees in a short time.

No one likes to be annoyed by a lot of bees following him about as they will do at times; and when they once learn this bad habit they are apt to keep it up; and a good plan is to get rid of them quickly and easily at the start.

Perhaps I should explain that we make it a rule to send all the cross bees, and all others from which it is not desirable to breed, down to the out-yard. There are there now two colonies that will give the first thief a warm reception. It was not one of these whose wrath I incurred, but I should judge that their bees took a hand in the fracas.

BLACK BROOD IN NEW YORK.

IT seems that this disease is breaking out again in the Empire State, for I hear of its having started up in several localities. The following letter will show that the Commissioner of Agriculture, in whose hands rest the responsibility and the power, largely, to eradicate this disease, is very much interested, and is doing and will do all he can to stem the tide of its ravages.

Mr. Root:—I will explain here that last season Mr. West was appointed bee-inspector until a civil-service examination was held, which occurred July 29. He passed at 95.2; I at 94.2, and W. D. Wright at 93.6, while M. Stevens stood 85. (I *think* these figures are correct.) Mr. Stevens, being a veteran, took precedence over all of us, and Mr. West was also appointed.

These inspectors did some very effective work; but the diseased territory was too large to be thoroughly inspected without more help, so W. D. Wright and I were appointed by the New York State Agricultural Commissioner, and ordered to report at the commissioner's office at Albany for work May 1. We accordingly met Mr. Stevens and Mr. West at that time, and spent two days in consultation with the State officials (who, by the way, were very kind and courteous to us) as to how the State should be divided, and ways and methods, etc.

I think it would be well to announce the territory assigned to each inspector, and I inclose a list of alphabetically arranged counties in each inspector's division. All communication in regard to diseased bees should be sent to the inspector in whose division the bees are located. CHAS. STEWART.

Sammonsville, N. Y., May 4.

In this connection perhaps it may be well to state that extracted honey from colonies affected with black brood ought to be boiled at least one hour to be safe. Hives should be scalded or burned out, and bee-keepers in the infected regions would do well not to exchange combs. Tools, smokers, bee-gloves, bee-veils, bee-hats, and even the clothing that is used around diseased colonies, should be disinfected before working on healthy ones. It should be remembered that both foul brood and black brood are very contagious, and the inspectors of the State will do well to urge every precaution.

The most serious difficulty to be encountered will be ignorance as to the nature of this contagious disease; for I learned while in New York that a few bee-keepers who had black brood in the apiary, and *knew* they had it, took no precaution about exchanging combs, did not wash the hands, much less disinfect smokers or clothing, because they did not know that it was necessary.

The honey from diseased colonies will do no harm to human beings; but I would suggest that the production of comb honey in disease-infected localities be discontinued, and that extracted only be produced. It may be a hardship to observe all these precautions, now, but it will mean many dollars in the future, even if it is a sacrifice now.

MOVING A WHOLE APIARY A SHORT DISTANCE.

IN moving our out-yard to its summer location, our men did not quite understand just how I wished them located in reference to the trees; that is, they got them on the *south* side of the trees, where the sun would strike them with full force, instead of on the north side. Notwithstanding the bees were working on fruit-bloom quite heavily, I determined to make an experiment, because I felt the bees must be in the shade. I accordingly moved each group of three, four, or five hives directly north about six feet, but took the precaution to keep each hive in each group in the same relative position it formerly occupied in reference to the others. It was quite a "tugging" job, but in the course of an hour I had the whole apiary moved about six feet northward. While I was doing the moving of the hives in individual groups, there was some confusion; but after all the hives were moved, taking in the whole apiary, the bees of the several colonies flew to their hives the same as before.

It never would have done to move one group without moving all; neither would it have been good practice to move one hive in a group without moving the other hives; that is to say, if an apiary is to be moved a few feet, every hive in the apiary should be moved, and their same relative positions preserved. If there had been a great deal of shrubbery in the yard, there would have been no end of confusion in the flight of the bees; but in this case there was only the trees, and these, as the results showed, did not seem to be the occasion of any great confusion.

DOOLITTLE CELL-CUPS WITH LARGE OR REDUCED BOTTOMS.

A SHORT time ago I sent to Dr. Miller, who has now begun active queen-rearing, some cell-forming sticks. Quite a number had large blunt ends, as illustrated in our last issue, and the rest had ends reduced to the size of a worker cell. I asked the doctor to try both, and then decide which he thought was the better; and to-day I received a letter, or a

NEW-YORK STATE BEE-INSPECTORS.

Division 1.—W. D. Wright, Altamont, Albany Co.	Division 2. — N. D. West, Middleburg, Schoharie Co.	Division 3.—Chas. Stewart, Sammonsville, Fulton Co.	Division 4. — M. Stevens, Pennellville, Oswego Co.
Albany,	Broome,	Allegany,	Cattaraugus,
Clinton,	Chenango,	Chemung,	Cayuga,
Columbia,	Delaware,	Cortland,	Chautauqua,
Dutchess,	Kings,	Fulton,	Erie,
Essex,	Nassau,	Hamilton,	Franklin,
Greene,	Orange,	Herkimer,	Genesee,
New York,	Otsego,	Madison,	Jefferson,
Putnam,	Queens,	Montgomery,	Lewis,
Rensselær,	Richmond,	Oneida,	Livingston,
Saratoga,	Rockland,	Schuyler,	Monroe,
Schenectady,	Schoharie,	Steuben,	Niagara,
Warren,	Suffolk,	Tioga,	Onondaga,
Washington,	Sullivan,	Tompkins.	Ontario,
Westchester.	Ulster.		Orleans,
			Oswego,
			Seneca,
			St. Lawrence,
			Wayne,
			Wyoming,
			Yates.
—14 counties.	—14 counties.	—13 counties.	—20 counties.

sort of private note, which will explain itself:

> *Dear Ernest:*—I don't know how it is at Medina, but in getting queen-cells accepted without giving royal jelly, the small-bottomed cell-cups are away ahead. Indeed, I haven't succeeded in getting the large-bottomed cells accepted at all; but with the cocoons set in the small-bottomed cups there is no trouble. I used both kinds on the same stick, and had the nine with cocoons promptly accepted and the other nine promptly cleaned out. Out of about 50 of the large kind given, not one has been accepted. Of course, if royal jelly were used the case would be different; but that would be more trouble than to use cocoons.
>
> C. C. Miller.

I would explain that the cell-forming sticks with reduced ends were made after the pattern, I believe, first suggested by Willie Atchley, of Beeville, Texas, and now used by W. H. Pridgen, of Creek, N. C. We last season used cell-cups with large bottoms the same as recommended in Doolittle's book. These appear to answer every requirement; but Mr. Pridgen and Willie Atchley both claim that it is an advantage to use cups with reduced bottoms, so that the ordinary cocoons from worker-cells, after the comb has been sliced down, can be lifted out with its larva, and inserted in the bottom of the cell-cup. This will make plain what the doctor means when he speaks about the cocoons being promptly accepted.

I referred this matter to Mr. Wardell, who still prefers to use cell-cups with large bottoms; and when he uses royal jelly he gets a larger percentage of accepted cells of the large-bottom class; so that I do not know that Dr. Miller's experience is diametrically opposite to Mr. Wardell's.

THE HAKES-HEDDON ADULTERATION CASE.

In the *Review* for May, Mr. Hutchinson gives a summary of the Hakes-Heddon adulteration case, a report of which was published in our last issue. In this connection Mr. Hutchinson says a sample of a lot of honey which he sold to Hakes, and which he (Mr. Hutchinson) says he bought of us, was also pronounced by the chemist to be adulterated. This matter was brought to our attention; but from the best information we could then get hold of, the matter seemed to be very much mixed. Further investigation shows that the sample came from a shelf on which there were also bottles of Hakes-Heddon honey—all of the packages "having the same labels," and right here would be a big chance for a mistake as to the source. In any case the sample is reported to have been "adulterated the same as the Hakes-Heddon honey."

We want the truth, no matter where it hits. If the honey came originally from us, it is some we sold to Mr. Hutchinson some three years ago. This he used for exhibition purposes, and afterward, as he says, sold it to Mr. Hakes. Mr. Hutchinson believed it to be pure, and so did we, and we think so yet. Even if the honey came from Mr. Hutchinson it is not altogether clear that it came from us. Referring to the lot of honey that Hutchinson sent him, Hakes writes that Hutchinson wrote him that *some of it* might have come from The A. I. Root Co.. This would indicate that Hakes had some honey from Hutchinson that did not come from us. In my talk with Dr. Mason I took it that he (Mason) gathered the same impression from correspondence he had had with Hutchinson. Here again there may be a mistake. I don't know. But however this may be, it is of small consequence, as Mr. Hutchinson would no more adulterate, or knowingly sell adulterated goods, than we. We understand also that the food commissioner visited Hutchinson, inspected his honey, and pronounced it all right.

The sample of the so-called Hutchinson-Hakes honey was not purchased by the food inspector as were the other samples referred to in Secretary Mason's report, and as a consequence no regular records were made as would be required from the inspectors. The sample was simply bought by Mr. Soper and sent to the chemist after the food commissioners had bought the Hakes-Heddon honey. This is the reason why the matter did not appear in the Michigan Dairy and Food Bulletin No. 50.

It is our rule to buy of reputable producers; and, so far as we know, we have never sold an ounce of adulterated honey. As soon as we can get together further facts we will place them before our readers.

MORE ABOUT BELGIAN HARES.

Since preparing the footnote to Fr. Greiner's article in this issue I have run across an article in *The Farmer*, of St. Paul, Minn., on the subject of raising Belgian hares. The article was very interesting, and from it I make a few extracts that our readers may perhaps peruse with pleasure as well as profit:

> The Belgian-hare fever is at once the beginning of a craze and the inauguration of an industry. All sorts of places will do for a rabbitry. A dry-goods box on the rear porch is sufficient, if the progeny are quickly disposed of. From this cheap and common method to the rearing of hares in gilded palaces of netting and hardwood, is a wide range; but the fever attacks the poor as well as the rich. . . . But fads do not take a strong hold of the American unless there proves to be money in them in a practical way; and it may not be a waste of time and space to set forth in type some of the claims made for this proposed new industry, by its friends. Twenty cents' worth of hay when hay is $10 a ton will feed a pair of Belgian hares for one month. . . . In the markets of Belgium the hare is the common meat foot. . . . The flesh of the Belgian hare lacks the heavy oily substances found in ducks, chickens, and turkeys. There is none of the strong gamey flavor found in the wild rabbit. . . . For fecundity its like does not exist in any species of the animal kingdom which supplies man with food. The Belgian hare will dress one pound for every month of its age up to six or seven months. He is good for food when ten weeks old, but the greatest profit in supplying the market is derived by waiting until he is five months old. The Belgian hare brings in the world's markets the same price as turkey. The bones of the hare are small and the food loss is practically nothing. If caponizing is resorted to when the male is three months old a larger animal weighing as high as twelve pounds can be produced. Large numbers can be kept in a single room without damaging each other, thus reducing materially the cost of production.
>
> Does it pay to raise Belgian hares?
>
> Twenty dollars is sufficient capital for any one to start in the business. But the natural increase will force an additional expenditure in two months.

Unless one is familiar with the matter of raising Belgian hares he had better go very cautiously.

OUR HOMES,

BY A. I. ROOT.

But he said, Nay; lest while ye gather up the tares ye root up also the wheat with them. Let both grow together till the harvest; and in the time of harvest I will say to the reapers, Gather ye together first the tares, and bind them in bundles, to burn them: but gather the wheat into my barn.—MATT. 13: 29, 30.

Since the beginning of the world I presume it has been a question among reformers, and among all good men and women, as to how *far* we should go in the way of righting wrongs, when it is sure to result in making a disturbance, and stirring up quarrels. My disposition is such it is very natural for me to set things right just the moment I discover they are wrong—that is, where it comes within my province. But I can look back over my life and see how many times I have given pain unnecessarily just because I did not stop and consider that the erring one was not aware he was doing any wrong at all. How often children are scolded, and perhaps sometimes punished, when they are doing their level best to obey orders! Sometimes, when the explanation comes later, my heart has been so touched I feel as if I could weep with the child while I wiped the tears from his face. Again and again has the dear partner of my life bidden me be careful and patient, telling me I did not understand the child. Somehow or other she seems *always* to understand. Blue-eyes, whom you remember seeing sitting on my knee, in the former editions of the A B C book, has now a precious blue-eyed boy of her own. He is somewhat afraid of strangers, and has been a little backward about deciding that his grandpa was good and nice. But he *always* recognizes his grandma. He is always ready to give her his sweetest smiles, and to welcome even a glimpse of her away across the room. She understands *him*, and they understand each other; and, by the wav, what a grand and beautiful relationship it is, the one between grandma and the baby! Well, he is getting to believe now (and he is nearly seven months old) that grandpa too is pretty good, even if he does let him poke dandelion blossoms into his little rosy mouth and make his rosy lips all yellow, and pucker up his mouth with the bitter taste.

Sometimes we make a blunder in plucking out the tares. We get an idea that something a little unusual is a tare, when it is really a friend if we knew it. When Huber was just beginning to walk and talk, he disobeyed me one day. He did it so squarely and fairly that I felt sure it was deliberate disobedience. When I took him to task he said in a defiant way—or at least so I took it—he "didn't care." I remonstrated, but still he only repeated with his boyish tongue the expression that he "did n't care." I was appalled to think that such a child could deliberately defy a parent's authority, and almost decided he would have to be punished to get the wicked spirit out of him. For a time he was silent, and I called his silence stubbornness. I really thought the wee chap of a boy was contrary. He was busy thinking, however, even if he did not talk, and pretty soon his boyish heart broke forth. His mouth puckered up, and the sobs were almost ready to come as his baby lips framed the words, "In honest troot, I don't care." Now, his mother would have guessed long before I did the real state of affairs. He had heard somebody use the words "honest truth," and knew what they meant; and, child though he was, he recognized that his papa did not understand him; and while I was thinking of punishing him for stubbornness, he had ransacked his infantile vocabulary to find some words or way that would give his papa an idea of just what he meant. The poor child had got the terms "don't care" and "didn't mean to" confused. When he kept saying he "did n't care" he meant I should understand that the disobedience was unintentional, and that he did not mean to; and with the sobs welling up from his baby heart he recalled the words some other child had used, and made me comprehend all there was in his heart, when *I* was thinking *evil* of my own baby boy. What he wanted to tell me was, "In honest truth, papa, I did not mean to disobey. I love you, and I believe you know what is best, and I try to do just as you and mamma want me to do. But I am so little, papa, that I make mistakes, not because I mean to be bad, but because my actions, like my words, do not always tell exactly what is in my baby heart." Yes, no doubt many of you have heard me tell this little story before, and memory has brought it to my mind again and again, and the little incident has done me good, and I hope it may do *you* good.

People who are always so ready to root out the tares the minute they get a glimpse of them, oftentimes in their zeal make mistakes, and sometimes they get hold of a stalk of good wheat. First be very sure it *is* a tare you are going to root out for the good of the community, and then consider again whether the roots of this very tare, if it truly *is* a tare, may not be so entwined and interwoven with the roots of the wheat that a general tear-up would be the result, and that the crop, at least in that particular spot, will be in worse shape than it was before you undertook the task of trying to make things better. Why, I can look back over my past life and see where, again and again, I wounded the feelings of very good people, and made a big rumpus about a little matter that would not have done any particular harm had it been passed by entirely, and let alone.

People have a way of saying "right is right, and right harms no man." Some time ago I had quite a little deal with a man who has been called very difficult to get along with. We were doing some work for him. He borrowed a market-basket and laid it down carelessly where a wagon ran over it. In making out his bill for some work we did for him, he was charged, among other items, with "one market-basket, five cents." After he had paid his bill he insisted on seeing one of the members of the firm. I asked him what was wanted, and he pointed to the item, five cents for a basket, and told me the circumstances. I replied:

"Why, my friend, you admit you carelessly destroyed the basket. Was it not right that you should pay for it?"

"Why, yes; it is perfectly right that I should pay for it. But your people have charged me *five* cents for it, when I can buy them anywhere for *three* cents."

I stopped awhile and looked at him. Then I replied:

"So you stopped your team and your work, and came up to the office, insisting on seeing a member of the firm, just because one of our people did not know how low market-baskets are made nowadays, and charged you *two cents* more than they should have done."

He looked a little foolish, but finally rallied, and replied that "right is right;" he did not care particularly about the two cents, but it showed the disposition of our establishment to "gouge" a poor man whenever we had an opportunity. This friend of mine (for I think he is a friend, and I think, too, he intends to be a good man) has had trouble all his life because he is so vehement in plucking out the tares whenever he thinks he gets sight of one. I have explained to him before, that, if he is right in thinking the members of our firm are always wanting to cheat somebody, he is certainly mistaken in thinking the men we employ are *always* trying to cheat. I told him the man who made out the bill could have had no possible motive in wanting to cheat him, for if he succeeded it would not go into his *own* pocket. He simply furnished the items for the book-keeper. He was not an interested party in the matter either way. Still he would have it that everybody was *trying to wrong him*.

These illustrations I have given you are all on a small scale; and some of them pertain to cases where it is a question as to whether the objectionable thing be really a noxious weed. In some of my talks of late I have told you about the terrible inroads intemperance is making into the affairs of State and nation. I have told you of downright frauds, humbugs and swindles, and I don't know but I myself have erred in urging that the tares be yanked out forthwith, no matter what may be upturned and thrown out of order.

At one time in my life a man forged my name. When the note was held up before my eyes, with my signature attached—a signature I had never written, nor permitted anybody else to write for me—I was a great deal stirred up; and I supposed, of course, that the man who did it should go to the penitentiary. Only three or four persons knew about it; and when the officers of the law said he need not go to the penitentiary, unless I so decided, I began to feel troubled. I do not know but I have all my life said the right and proper thing to do with a man who commits forgery is to let him pay the penalty and go to prison; but when I could, by the turn of my finger, send the hard-working man to prison, or let him keep on with his work, I began to wish that God in his providence had not placed any such responsibility on me. I said to the three or four persons who knew the transaction, "Gentlemen, this is a new experience to me. What is usually done in such cases?"

The reply came, and I think it came from the attorney, "Well, the one whose name has been forged generally does what he thinks best under the circumstances. If he puts it in the hands of the law, there is no help for the culprit."

"But," I replied, "*somebody* has to pay this money if this man is spared from the penalty. Is it just the thing for me to do, to hand over the money exactly as if I *did* write my name on that paper, when in fact I never knew a thing about the transaction?"

I presume the friends present knew me, and perhaps they knew of these Home Papers; and they exchanged smiles to see how I would act when brought face to face with crime, especially when I had the life and happiness of a fellow-being balanced on the tip of my finger, as it were. Satan said (at least I *think* it was Satan), "Send him to prison; serves him right. Why, if you let fellows like him go 'scot free,' you are paying a premium to those who commit forgery and all other crimes. Never mind his wife, never mind his relatives; never mind if he has been a steady hard-working man all his life. Teach him a lesson. The lesson will do others good. Let the world know the consequences of such work as this." Come to think of it, I do not know whether Satan used all of those arguments. The thoughts passed through my mind, anyhow. When you discover a forgery in your neighborhood, what is the thing to do—yank him out of the wheat and send him to prison, or shall we look into the matter and see how much wheat will be turned up and displaced, and thrown out of place by the transaction?

Well, after Satan had presented all his arguments, or at least a good many, some other voice spoke. I do not know but it was a still small voice. It went away back. This still small voice reminded me that his record had been good, or fairly good, from childhood up. This was a new and unlooked-for experience in his life; and the voice also reminded me that I had not yet had a friendly talk with him. Why, dear friends, have you ever realized that it is not an easy thing to have a friendly talk with a man who has stolen your name, or deliberately forged it? A very good lady friend of mine in Christian and Sunday-school work, who has been dead for some years, used to say to me, when I was excusing myself for wasting no more time on some "reprobate," as I called him, "But, Mr. Root, Jesus *died* for him." And her argument was unanswerable. Yes, Jesus died for the man who forged my name; and I remembered his advantages had not been equal to my own.

I told you a story through these Home Papers some little time ago that seemed to hinge about the words, "Jesus paid it all, all to him I owe." If this man was saved, there seemed to be no way but for me to pay the debt, even though it was over a hundred dollars. He promised, with tears in his eyes, and with bowed head, to pay me back every cent of it, both principal and interest, and, well——

he did not go to the penitentiary. I have never heard of his doing a thing of the kind since. Now, dear friends, I do not know just what is right and proper in such emergencies. May be hundreds and thousands of those who spend long weary years in the penitentiary might have been good and useful citizens if some good Samaritan had happened around just in time to prevent the havoc it makes in any community to arrest a man for crime. Of course, it is true that, if no one were punished, criminals would soon get an idea that there was not very much risk any way ; but I would suggest right here that, when a man or boy commits his *first* crime, it is well to err on the side of charity. Do not be in haste to think any person has gone over to Satan, body and soul, because he has been entrapped for the first time during one evil hour. At the same time, let us beware how we ignore law or permit our laws to be trampled under foot as a dead letter.

I have not said any thing in this talk about the disposal of the tares at the final harvest. God's angels will execute judgment, and take care of those who are willfully and deliberately and persistently wicked. I have only touched on that part of the text that treats particularly of our responsibility in the matter, and to urge upon you all to deliberate carefully, when you undertake to root out the tares, what the ultimate consequences may be; and if what appears to be tares to us at the time may ultimately result in something that bears good wheat at harvest, then let us take courage while we work and pray; and let us remember the reminder of that old saint in our teachers' meeting—"Jesus died for him ;" and when we are called upon to pay a debt that we ourselves never contracted, in order to save somebody else from ruin, let us remember how the dear Savior, in a like manner, "paid it all, and made us *free.*"

HIGH PRESSURE
GARDENING
BY
A. I. ROOT.

LEVEL CULTIVATION AND DUST MULCH.

The following, from the *Farm and Fireside*, agrees so nearly with my experience that I have thought best to give it entire, with remarks and suggestions of my own all the way through :

> I wish to talk of the importance of so planting seed in the ground as to admit of level cultivation throughout the season. All plants which under the old system required "hilling up" should be started in trenches, the depth varying with the different sorts, so that when summer tillage is fairly under way the whole surface of the garden or field is as nearly as possible flat ; thus the rake or cultivator can be brought close to the stalk of each plant.

T. B. Terry says in our potato-book that the hilling-up fashion *might* be all right if we could get nice mellow dirt enough from somewhere to fill in between and make the ground level. That is, it is an excellent idea to have the potatoes down so well in the ground that they will not get sunburnt. But it is a fearful thing to run a shovel-plow through the potatoes, and pile the dirt up almost as straight as you can get it, just before a prolonged and severe drouth ; so you see the suggestion of starting things in trenches is all right ; but I should say you want your ground first thoroughly underdrained, and worked up and enriched clear down as low as you need to put your trenches.

> It is very well understood nowadays that many lateral roots of certain crops — notably those of corn — grow so near the surface that they are often seriously injured by the plow and hoe as they were formerly used. But this is not the subject of my present communication, which is about the conservation of moisture by surface cultivation. Readers of the *Farm and Fireside* are familiar with the arguments ; but results of personal experience, recorded by a careful observer, are never without value if on a subject of general importance.
>
> I use my garden somewhat as an experiment station. I test theories, and am nearly as well satisfied by failure as success ; a false theory can not be exploded too promptly. I have tested the theory of dust mulch for three seasons under conditions which made the test a severe one. The garden is on the crown of a small hill, the ground sloping away in three directions.

Here is another point I would emphasize. Not all of us can have our garden ground right on the crown of a hill ; but we all can, by taking a little pains, have the ground so there are no hollows where water can stand during a severe rain—I do not mean so as to kill plants, but it hurts things to have it stand long enough to make a hard crust ; and in our clay soil we wish to avoid, if possible, having the ground ever get so wet that the water stands in puddles, and then dries down hard. To prevent this we have open ditches clear around the outside of almost all of our fields ; and we try to have the ground slope toward these open ditches. Every time the piece is prepared for a crop we do a little in the way of grading. When we have tremendous rainstorms so that every thing is *too* wet, we want the surplus water to run away as soon as possible in the surface ditches and channels we have prepared for it. The success of the dust mulch depends very much indeed on having your ground properly arranged, not only with *under* drains but *surface* drains, and then having all the hollows filled up where water might otherwise stand.

> It is hot when the sunshine pours upon it, and there were days last summer when the leaves of all the succulent plants lay flat upon the ground, and even those of the bush beans hung wilted on their stalks ; yet with an abundant supply of water having a strong pressure, and hose with which I could reach all parts of the garden, not a pint of water was used throughout that almost rainless summer. I had pursued the same course the two previous seasons to some extent, but my resolution had given way at times, with not beneficial results, I thought. Last summer I stood firm, and there was not a day when the roots of the plants were not in damp soil, and not a crop suffered serious disaster.
>
> I had had a lesson which prepared me for dust mulch. The first season I worked my present garden I used the hose liberally, causing the ground to be well wetted when there was no rain. This required a good deal of time—for which I had to pay—to keep the ground moist ; but the garden looked well and gave good promise.

Right here is the greatest objection to irrigation. I presume many a man, like myself, after he has got his tanks, piping, and engine ready to pump the water, has found out it cost so much money to water thoroughly even a small area that he has given up using his expensive outfit. In the arid West this is all right; but suppose here in the East we go to a good deal of expense, and get our ground thoroughly irrigated just right. Well, if a thunder-shower should come up immediately afterward, our time and money may have been *worse* than thrown away; besides, I have never seen any sort of irrigating that was equal to a summer shower.

I was called away from home for about two weeks in July. The boy who was employed to sprinkle the garden did "sprinkle" it and nothing more, and I found every thing in it dead or nearly so. It did not recover. Examination showed that the constant wetting of the top soil had called out surface roots; nothing had penetrated to any considerable depth, and two weeks of neglect had brought inevitable ruin.

This comes right in line with the oft-repeated remark that, when you once commence watering, you must keep it up.

I had already come to believe in dust mulch when water was not available; I then came to believe in it without reservation.

I have already told, in the *Farm and Fireside* of February 1, how I plant tomatoes. These are given an extra depth, because the tomato sends out roots wherever the vine touches the earth. Other vegetables I plant, or transplant, in trenches of depth just sufficient so that they will be properly hilled up when the trenches are filled and the garden is level. Then with rake or cultivator I keep the soil to the depth of one or two inches finely pulverized between the rows, and, where possible, between the plants in the row. This dust is a perfect mulch. Moisture will rise through the soil until it reaches it, but will not evaporate through it to any considerable extent; no more will be lost in the hours of sunshine than will be replaced in the night I have found that there is stored in the earth sufficient moisture to provide a constant supply, provided evaporation is checked a short distance from the surface. There was no time during the drouth of last summer—and it was a wonderfully dry summer in the East—when with the toe of my shoe I could not find moisture. This was a matter of astonishment to visitors when all the soil in the garden glowed white in the blazing sun.

Dust mulch requires much less labor than the hose or watering-pot, even when these can be readily used.

This is true. Unless there is a period so long between the showers that the weeds begin to be visible, by very careful examination (with your spectacles), there is nothing to be done after you have got the surface thoroughly raked over. It is really a very cheap and easy way to take care of a crop; but when a shower comes so as to make the least bit of crust, there must be no delay—every thing must stand aside while you go over the whole of your ground and fix the surface at exactly the proper time.

The mulch remains intact except when it rains or showers or when trodden; then the rake or cultivator must be applied as soon as possible after the soil gets into suitable condition. If this is delayed, rain (unless very heavy) will prove an actual injury. One day last summer there was a shower of just sufficient duration to beat down and saturate the mulch; a day passed without proper attention, and the next day the moisture-line was an inch lower than it had been. The effect of even a slight compacting of the soil is apparent in the early morning. There were many weeks in which the track of a cat could be followed by the dark spots amid the surrounding whiteness, showing that the moisture had risen in her footsteps. So important did I come to consider the inviolableness of the mulch, that, whenever I entered the garden to gather vegetables, or for any other purpose, I raked out my tracks as carefully as if to conceal a depredation.

In my choice ground, among choice high-priced plants, I have done this very thing—taken a fine rake and smoothed over where I or somebody else had been walking; but I did not know that anybody else had ever thought of being so particular.

The entire absence of weeds is one of the by-products of this system of culture, but of minor importance to my mind. It is rather pleasant, though, to look over even a small garden and see no sign of unproductive vegetation. The owner gets credit, too, for industry which he does not deserve, but which it is pleasant to receive. "Not a weed!" exclaimed a friend; "how your back must have ached!" In fact, I hadn't stooped since planting-time.

As I remarked to the careful reader of the *Farm and Fireside*, this is an old, old story. I was gratified last June, while passing through Pennsylvania from Philadelphia to Harrisburg, to see the dust-mulch theory applied in practice in that splendid farming region. The weather was very hot, and the yellow soil seemed hopelessly dry; but between the long rows of corn, showing only an inch or two above ground, were cultivators of all sorts throwing up clouds of dust. A few days later I returned in the wake of heavy showers; an increased number of men were toiling over the same fields, pulverizing the moist earth before it should have time to bake. I concluded that, wet or dry, there would be little shortage of corn in those valleys, and I realized as never before the incalculable value of experimental farming and the broad influence of the intelligently conducted agricultural press. S. Cushman Caldwell.

Permit me to add I have never tried any method of cultivation that made things grow as does this dust mulch; and I believe a pretty good crop might be secured on poor ground, if well underdrained, and worked up fine before planting, and then handle as above. Nothing has been said about the use of the modern weeders used by hand or horse power. But they are just the thing for this kind of business after you get your model garden started right. Now, if you do *not* handle *acres* in this way I would advise every one of our readers to test the matter thoroughly on a small plot of ground. Let the women-folks test it in their flower-beds. If followed out, there will never be any pulling of weeds at all, because no weeds ever get in sight.

There is one place where we find a daily watering with the hose works very well—that is, for cabbage, tomato, and other vegetable-plants. When we get behind on orders, and it does not rain, we sprinkle the plants every evening; and as soon as the ground is dry enough, we work the surface with hand weeders. This hurries them along, and enables us to meet the demand. When the plants are very small, just after transplanting, we *shade* them toward the middle of the day, providing the sun is very hot.

SCARLET OR CRIMSON CLOVER IN WEST VIRGINIA.

I notice some of the friends complain of scarlet clover. I bought two bushels of you in 1897; sowed it in corn the last working, spring of 1898, June 5 to 10; plowed under what would have made at least two tons of hay per acre, and sowed to buckwheat July 12th (seeded itself). June, 1899, I again plowed under another big crop, and again sowed to buckwheat; seeded itself again, and to-day there is a fine set of clover, all from one sowing. J. L. McKenzie.

Howesville, W. Va., April 15.

I take it, friend M., that you let your clover stand until some of the seed was ripe. With us it generally blossoms in the middle of May. By the date you mention there would be quite a good lot of seed. You certainly ought to have had a big crop of buckwheat if you plowed under all of that clover, seed and all. I suppose the clover and buckwheat came up together; then as soon as the buckwheat comes off the ground, crimson clover has full swing; and my impression is, crimson clover and buckwheat go well together any way, and it gives the bee-keeper two honey crops in one season, and both crops are valuable besides the honey. The clover is so much slower in starting than the buckwheat that it does not do it very much harm. We sowed the two together last season, but we were so late about it the buckwheat was killed by frost. The crimson clover stood our recent severe winter beautifully. We usually plow it under for potatoes when it is fairly in full bloom, and always get a crop. As far north as we are, however, the sooner you can get the clover in after August 1, the bigger will be your stand of clover.

BIRDS AND FLOWERS.

I am not succeeding with that little greenhouse during this hot dry weather as well as I should like to. Even with plenty of water and shade, many of the plants fail to thrive. The pelargoniums are still "a thing of beauty and a joy for ever," and I sometimes feel like saying, doubtless God might have made a more beautiful plant than the pelargonium, but doubtless he never did. These beautiful flowers bud and blossom right along under all kinds of circumstances. Even if they get pot-bound, and when they are neglected, they seldom wilt. The Bride is still my favorite, although we have now larger plants and with larger blossoms. My thirty different kinds of Tom Thumb nasturtiums are now just masses of bloom. Some of them are not very much Tom Thumb, though, after all. They are running up strings clear to the top of the greenhouse. The ivy geraniums grow like the pelargoniums, and give beautiful masses of bloom with very little time or labor.

We have hardly had a summer shower this season. When we do have rain it turns off cold; and as a consequence our plants outdoors are not doing very well. The red spider is getting into the greenhouse, and has very much injured our roses and salvias. I am waiting for a rain so I can put the plants outdoors. Of course, we have plenty of water from the hydrants; but it is so strongly impregnated with soda it makes the plants have a sort of alkaline look that we see in the western plains. Rain water is the best water in the world, and the best way in the world to apply it is as it comes sprinkling from the clouds. The dust mulch mentioned in another column is all right after we once get the plants started and get the roots down into the damp ground.

But now I wish to tell you something else I enjoy about as much as I do the flowers. I am generally out in the greenhouse between five and six in the morning. The rest of the people in our neighborhood are not up at this time, and so I have every thing to myself, or pretty much so. Well, some little time ago a beautiful little hummingbird got around about the same time I did. At first he was very shy, and kept off in the further part of the greenhouse; but when he found I seemed friendly he kept coming closer and closer; and now he will occasionally alight to rest within a few feet of my face. I have told you about the thrills that I get from a beautiful flower. Well, this little stranger, with his bright eyes and his green and gold costume—a costume fashioned and painted by the finger of the great God above—this gorgeous little fellow gives me again and again these same thrills. While drinking in the nectar he rests poised in the air as steady and still as if supported by an iron pedestal; and, what is more wonderful, one morning when there was quite a breeze I was astonished to find that he rested in mid air just as still and rigid as when the air was perfectly quiet. Now, what a marvelous thing is this! We admire the skill of man in bringing out wonderful machines; but this tiny bird not only maintains a stationary position in the soft yielding air while he drinks the nectar, but he maintains it just the same, even during a breeze that shakes the flowers and foliage all about him, and he does it involuntarily. He does not seem to know that he is performing one of the most difficult feats in æronautics. The scientific world is now devoting considerable time and money in developing flying-machines—or rather, perhaps, we should call them gliding-machines. When we get a gliding-machine so a man can sail from the hilltops into the valleys, as a hawk sails on stationary wing, the principal difficulty with flying-machines will have been gotten over. So far the result has been that one inventor after another has lost his life by a capsize of the machine. But this tiny hummingbird masters the whole thing as simply and easily and *unconsciously* as you would stand on your feet. I wonder if these great inventors have studied the hummingbird. Does anybody in this whole wide world understand *how* this bird ties up his little bark anywhere at any time and at any moment, with not a thing to rest on, and even in spite of a brisk wind?

During our recent warm moonlight nights Mrs. Root has been kept awake between twelve and one o'clock by some song bird. We have not decided whether it is a mocking-bird or a redbird. Our night watchman has spoken of it. I have kept awake once or twice long enough to get a thrill of joy from his wondrous melody. One morning, about the time of this musical treat, I saw a bird standing on the stand by the cistern pump. He evidently was looking for a drop or two of water. This bird was more gorgeously attired than the hummingbird, if possible. It was one of the species of redbirds that might be gladdening our homes with songs and with their beautiful plumage, were it not for the wholesale slaughter to get them to plume the ladies' bonnets or to keep them caged up. And this opens the way for me to introduce to you a friend of mine whom God has called, not only to plead sor, but to *enforce the law* in behalf of, our feathered songsters.

The letter illustrates two things: First, how unlike is humanity! One man feels called in one direction, and another in another, and so on; and the result is that every bit of animated nature seems to have *some one* called on to defend it.

Dear Brother Root:—Inclosed find clipping from the Sidney *Daily News*, which will give you an idea of the fight on hand.

REDBIRDS RELEASED.

"J. M. Fletcher, who lives north of Sidney, came in this morning and asked permission of the mayor to go about the city with the intention of causing all the redbirds in captivity to be liberated. His request was granted, and in company of one of the police he went to several places and caused over twenty birds to be set free. There is a State law against capturing and caging redbirds, and Mr. Fletcher says that he will see that it is enforced. The penalty for its violation is a fine of from $25 to $100."

I have witnessed much cruelty by the bird-trappers, who for years have been doing their infamous work, catching the old birds and leaving the young to perish in the nest, then *shipping* the birds to cities; then as the old ones call in plaintive notes for their young left behind, the cruel owners call that *sweet singing!* Now, with a determination to cause that curse to cease in our State, I started out, and in two days have caused 29 birds to be released, and more to follow. As the fight has just commenced, will you please give me your moral support through GLEANINGS? I expect the fight to continue until every native song bird in Ohio is released. I am threatened with shooting, etc., "but none of these things move me." If you have a personal acquaintance with publishers of agricultural papers and *Youth's Companion*, for pity's sake get them enlisted in the fight. Then as I go from city to city or county to county the notice of the work will make the release easier. I shall ask *no person* for *material* aid, but pay my own attorneys out of my own pocket; and lest some impostor should call on you and represent that he was the man doing the work, and wanted a little money to help, I send my photograph. Some of the poor birds had been caged for twelve years; and the joy on being released was enough to move the heart of any person, and ought to have been witnessed by every child in the land. I am working for no reward but from Him who said, "Not a sparrow falls to the ground without your Father's notice."

Sydney, O., May 21. J. M. FLETCHER.

Permit me, in closing, to beg our agricultural papers, the *Youth's Companion*, and all others who are working for the love of humanity, and the building up of every thing around our homes that is good and pure and beautiful, to lend a hand and give friend Fletcher the backing and encouragement that he rightly deserves. Our experiment stations in the different parts of the United States have been doing a noble work in this direction. Many of the birds that have been pronounced enemies of the farmer are now unmistakably proven to be friends; and the fearful destruction that we all have witnessed in the way of noxious insects of late shows this is the result largely, without question, of the killing off of the birds. Somebody has said if all the birds were distroyed we should have a famine in five years worse than any thing the world has ever known; and my impression is that there is at least some truth in it.

In regard to caged birds, I rarely ever see one without a feeling of pain. My daughter, Mrs. Calvert, once had a canary bird that flew all around the house when the door was left open, and it was about the happiest canary I ever knew. Something happened to it before very long, but I do not remember what. But I suppose this way of keeping birds is seldom practicable. The law against caging our native birds is, I think, a just and humane one.

GROWING GRAND RAPIDS LETTUCE, BY ONE WHO STARTED OUT ON HIS OWN HOOK.

Mr. Root:—Nine years ago, after reading your high-pressure-gardening notes, we concluded to build a small greenhouse. The first one we built was 20x100 inside. We had good luck from the start. Our trade increased so we have been building more each year. We have at present ½ acre under glass, and are short of lettuce most of the time.

The center bed in the photo is 8x200, and holds 2700 plants We have several times cut 2000 lbs. at one crop from this bed. We burn natural gas, use a 20-horse boiler. There are in this house four steam-pipes, one overhead and one under each bed.

Now, I think our friend Thomas Slack's plan of a lettuce-house a good one, and I intend building on the same plan.

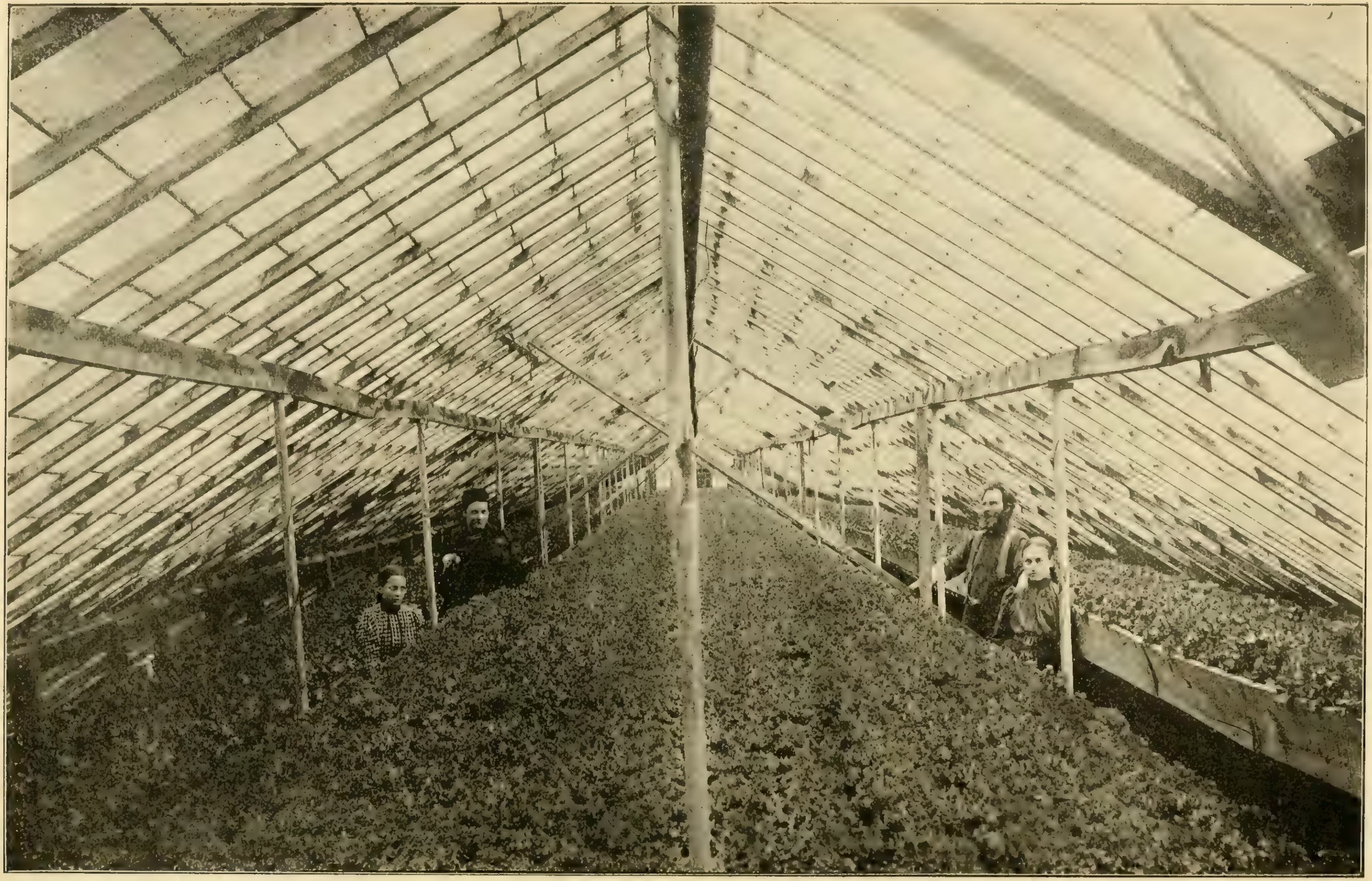
It would be very hard to explain the secret of raising lettuce under glass. Experience is the best teacher, although in some cases it might be very dear. In my opinion, good soil, good seed, good plants, and strict attention, is the secret in growing nice lettuce. Then let me add good tobacco dust, for we could do nothing without it. We find it the best and cheapest of any thing for killing all kinds of insects.

You ask about the children, so I will tell you; but my daughter says you won't care about them.

Our boy Clinton is 16 years old, over 6 feet tall without his shoes. He helps in the greenhouse when not in school. The little girl by him is an orphan, who lives with one of our neighbors. Mabel, our baby, is 14 years old; plays the piano, delivers lettuce, rides a wheel, and does house work. E. M. MILLER.

Bradford, Pa., May 17.

There are several valuable lessons to be gathered from the picture and description. First, my talks on high-pressure gardening have, at least in this one case, borne good fruit; but I am inclined to think our veteran friend, whose picture we see standing in the greenhouse, with both coat and vest off, has considerable vim and hard work in his make-up. He says he is out of lettuce most of the time. That has been my experience ever since I got the Grand Rapids lettuce craze. But other cares have prevented me from enlarging as I have many times desired to do. It strikes me that friend Miller has grown some enormous crops. I wish he would tell us just how he fixes his beds—manure, soil, etc. I have frequently grown plants, under favorable circumstances, that weighed a pound each; but he speaks of getting 2000 lbs. of lettuce from 2700 plants. I wish other lettuce-growers would tell us if this is not a little remarkable. In our locality, the one crop from this one bed would bring 10 cts. per lb. Just think of it, friends! $200 for a single crop (three crops can be grown in a season) from a single bed 8×200 feet! I wish friend Miller would also tell us what his greenhouse cost him. I judge from the picture that it is rather cheaply gotten up, and that he has not used very high-priced lumber. I am glad to see his supports are all iron gas-pipes. If I ever build any more greenhouses, every thing that goes into the ground shall be iron. Of course, wood is nicer to nail to; but you can fasten the wood to the iron pipes after they get above ground. I judge, too, that his heating arrangements are not very expensive. He is certainly fortunate in being in the region of natural gas, and there is no nicer way to keep a greenhouse warm during severe winter weather than natural gas. Lettuce will stand considerable cold; and I have sometimes thought there was more danger, especially with a green hand, from letting the house be-



E M. MILLER'S LETTUCE-HOUSE FOR GROWING GRAND RAPIDS LETTUCE, BRADFORD, PA.

come too warm than letting it become too cold.

Yes, indeed, it is hard to explain on paper the secret of growing lettuce under glass.

Some of us have recently discovered there is such a thing as good tobacco dust and poor tobacco dust. You can test the quality very easily by taking a handful out of the bag and holding it up to your nose.

I shouldn't wonder if that 16-year-old boy deserves considerable credit. His long arms (and legs) will help amazingly toward reaching in the middle of that 8-foot bed; and I shouldn't wonder if the two girls could help "right smart" in an emergency, in the handling of lettuce-plants.

Well, friends, this little home picture did me lots of good, and I presume it will do you lots of good. During the disagreeable stormy weather of winter, how nice it is to get indoors to work in a comfortable greenhouse after having been out in the storm to take care of property that requires a certain amount of outdoor work!

TRUE GRAND RAPIDS LETTUCE; WHAT SHOULD IT BE LIKE?

I am testing Grand Rapids lettuce from various seedsmen and am sending for some of that lot that you got from California to test. I should like to see an article in next GLEANINGS giving the characteristics that identify that lettuce from other varieties of the plant, such as black-seeded Simpson, from which Grand Rapids is said to have originated. You or Mr. Thomas Slack might describe the Grand Rapids that he would consider worth an extra price.

Leavenworth, Kan., Apr. 28. D. C. COLEMAN.

We at once forwarded the above to friend Slack and Eugene Davis. Mr Slack replies as follows:

A. I. Root:—I can pick out a good strain of Grand Rapids lettuce a good deal better when I see it growing than I can describe it on paper. For forcing in a greenhouse, the most important difference between Grand Rapids lettuce and black-seeded Simpson is that the latter is not good for that purpose, as it will sometimes rot before it gets to its full growth, and ripen, as we call it—that is, bleach white and crisp by being so crowded that the light is excluded

In color, Grand Rapids is a bright yellowish green, and thin leaf. Black-seeded Simpson is of a much darker green, and coarser. A sport is much more noticeable in the Grand Rapids on this account, and, so far as I have had any experience, are a good deal more frequent. The leaves of Grand Rapids are more rough or blistered and frilled or fluted at the edges than black seeded Simpson, and never try to make a head, as the latter does occasionally without any marked success.

Looking down on a lot of black-seeded Simpson when well grown, each plant looks to me a good deal in shape more like a rose than Grand Rapids, as the leaves seem to cling together as if trying to make a head, and yet roll back or outward at the tips. The California seed you have makes a very pretty lot of lettuce, almost perfect in color and shape, with very few sports, most of which can be seen and removed from the small plants before setting in the bed; but I am a little afraid of it yet, and hope I may be mistaken in thinking that the quality for forcing can not be kept up, grown in that climate Ours has sunburned a good deal, but it may be from too much bright sun, or perhaps a little carelessness in letting the temperature run too high after a few cloudy days. On Segane's house, which I visited on the 3d, with the house whitewashed it was all right. THOS. SLACK.

Waterloo, P. Q., May 7.

THE CANKER WORM, AND ITS RAVAGES IN OHIO.

Our Ohio Experiment Station has sent out a press bulletin advising everbody to look out for the canker worm, or "measuring worm," as they are commonly called. From 4 to 6 ounces of Paris green mixed with 4 to 6 lbs. of slacked lime in 50 gallons of water, applied with a spray-pump, winds them up completely—that is, if you use the poison promptly while the worms are small. If you wait till they get to be full grown it takes a much larger lot of poison to do the work. If they get so large the Paris green may not kill them.

There is another remedy described as follows in the station report:

> At this stage, however, it may be destroyed by spraying with Swift's arsenate of lead, Bowker's arsenic lead or Bowker's disparine, using three ounces of the preparation to fifty gallons of water. These mixtures will not injure the foliage. When fully prepared they have a milky-white appearance, and, being nearly as thin as water, they spray readily, and they adhere for several weeks, thereby avoiding the necessity for more than a single application. They may be obtained of Swift & Co., or Bowker Chemical Co., both of Boston, Mass.
>
> If treatment is neglected, the worms will increase in numbers, and by another season will probably kill the trees.

The canker worm is worse this season, probably, because of the prolonged drouth in May.

HEALTH NOTES
BY
A. I. ROOT

TOBACCO, AND ITS INFLUENCE ON HEALTH.

I do not know but some of my good friends think I am a little cranky on the subject of tobacco; and I confess that, when I see how universal is the use of it, I sometimes wonder whether it is just right and proper to wage such unceasing warfare against it as I do; but the following letter, which has just been put in my hand, will, I think, present the matter from a standpoint that will convince you I am largely if not altogether in the right:

Friend A. I. Root:—It has been just two months since I have read any thing in GLEANINGS. I will tell you something about it. I have been a user of tobacco for 40 years. Finally, about two months ago, I got so I could not see to read any thing in the papers; so I went to Saginaw to see a specialist, and he told me unless I quit using tobacco I would be stone blind in six months. Well, I quit using it, and have not used any since. I can now begin to see a little again. You can imagine how good it is to read a little in GLEANINGS once more. WM. CRAIG.

Luce, Mich., May 18.

Some of you may say this is a solitary instance, comparatively; and you may urge that the man probably used tobacco in great *excess.* Permit me to say we have had one case almost exactly like the above here in our county. A man discovered he was losing his sight, and one day, while out in the fields, he became blind to such an extent he could hardly see to get home. It kept getting worse, until somebody suggested he stop using tobacco. The trouble ceased almost at once; but of course he had a fierce conflict with the old craving appetite. After the blind spells had disappeared entirely he ventured to try a little tobacco once more; but his blindness came back promptly, and it was a question of darkness *with* tobacco or from "darkness into light" and *no* tobacco. Now, my good friend, if you are using tobacco, and are having troubles of any kind that puzzle you, cut off the tobacco and watch for the result. I do not wish to *dictate* to anybody what he shall eat or drink; but I would gladly lead any soul out of darkness into light; and especially when it comes along the line of securing good health. I have put this little talk under the head of Health Notes, as you see, and I think it is just where it belongs, does it not?

SOMETHING MORE ABOUT CIGARETTES.

On page 409 of our last issue I quoted what the Chief of the Weather Bureau said about cigarettes. Here is something further, clipped from the Cleveland *Press*. The occasion was a meeting of those having charge of reformatory institutions for boys; and from the minutes of the meeting we take the following:

> The section on reformatories and industrial schools was addressed by Geo. Torrance, of Pontiac, Ill., superintendent of the Illinois State Reformatory, on "The Relation of the Cigarette to Crime."
>
> Torrance said, "I am sure cigarettes are destroying and making criminals of more boys than the saloons." In his reformatory there are 278 boys, of whom 256 are cigarette-smokers, he said—92 per cent.

"Making criminals of more boys than the saloons." But as one of the chief promoters of tobacco are the saloons themselves, there still remains but little to their credit.

FROM ONE OF WELTMER'S VICTIMS.

I have been taking great interest in reading GLEANINGS, and especially what you say of Weltmerism. Well, Bro. R, I believe you are right as to what you say about him and his works. I have just finished taking a $5.00 treatment from him; and the biggest thing I found in it was that he got my five dollars. I was just the same at the end of the treatment as I was at the beginning. CHAS. S. FISHER.
Faith, N. C., May 23.

TEMPERANCE LEGISLATION.

United States Senator Foraker has finally been obliged by the temperance people to come out publicly through the papers, and acknowledge, in effect, that he used his influence to defeat the Clark local-option bill in Ohio. This is what he says:

> But however this may be I had nothing to do with the defeat of the Clark bill except to give my opinion as above indicated when called upon for it. If this contributed to that end, I am glad to know that I am entitled to a small share of the credit.

He not only admits this, but he says he is "glad" that the bill was defeated. In other words, he is glad the brewers and saloon-keepers still have the privilege of planting saloons in localities and precincts where they are not wanted, and even where there would be an overwhelming vote against them if the people were permitted to settle the matter by ballot. Although Senator Hanna has not admitted this quite so fully as has Foraker, he has not undertaken to deny the charge that he did say there must not be any temperance legislation at present in Ohio. These two Senators well knew a majority of the people are in favor of this very just and fair temperance law. We are in the habit of calling this land of ours a "land of liberty," and a land governed by the people. Now, if we continue supporting such men as Foraker and Hanna, and letting the power to do these things remain in their hands, how long can we truthfully claim to be a free people? They are learning of late (when we succeed in passing temperance laws in *spite* of them) to resort to the "nullification act" as it has been termed, and then pretend they did not know what the people wanted. Is it really true that the traffickers in whisky and beer are to rule, when the temperance people — the righteous and God-fearing people — outnumber them two to one?

KIND WORDS FROM OUR CUSTOMERS.

GLEANINGS grows better and better. Herewith is something to keep 'er coming, short or long spelling.
Browningtou, Mo., Mar. 24. E. F. NALL.

I am glad to see that you are opposed to saloons. We voted the saloon-keepers out of business long ago.
Leesburg, Fla., Apr. 30. J. A. DAVID.

Inclosed find $3 00, subscription in full. Please continue the valuable old journal. A. I. R.'s Home talks, and the interest he takes in exposing frauds is worth five times the price of it to me. F. A. WHAN.
Raymilton, Pa., Apr. 20.

Oh! by the way, the four queens I got of you last summer are daisies, and all fine families, and great layers and workers. I must say that the A B C of Bee Culture beats them all. I received it with the other supplies from Bell Branch. I would not take $20.00 for it if I could not get another.
Morenci, Mich. C. S. INGALS.

The supplies I ordered of you came to hand all right, and I must say I never saw any thing so complete. To say I am pleased does not half express my feelings. I want to thank you for your very kind and thorough manner of doing business and sending out supplies, and to assure you it is a pleasure to do business with such a firm. M. C. FULLER.
Stranger, Tex.

THE VALUE OF THE DOVETAILED HIVE.

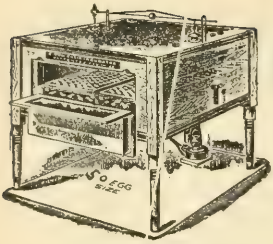
We never before realized the real value of the Dovetailed hive until within the past year or so, and we now desire to say that, for a general-purpose hive, they have no equal. They are easy to handle, can be tiered up any height, and, best of all, when you come to place your bees in the cellar it is not necessary to carry along a wagonload of lumber. Thus one can economize space, and winter a large number of colonies in a very small space. H. G. QUIRIN.
Parkertown, Ohio, March 20.

OUR WATER-CURE PAMPHLET.

Bro. Root:—If you only knew how much good your water-cure pamphlets are doing you would be gratified. Of course, you make no demand of postage, but I can not accept such an offer, though I do not charge even postage to those to whom I give them.
Grafton, N. Y., Apr. 3. REV. J. K. WAGER.

[Friend W., the satisfaction of knowing that this information saves life, and does good, is all the compensation we want. The little pamphlets were printed by the thousands, therefore the expense to us is very small. We are still ready to furnish one or more to anybody who wishes to distribute them among suffering humanity.]

Friend Root:—It is a pleasure to me to note that in many articles, especially seeds, you are evidently trying to see how *much* you can give for a small sum of money, while some people seem to try how much *money* they can get for a small quantity of their wares. A short time ago I sent to you for an ounce each of lettuce and two kinds of radishes at 5 cts. per ounce; also some peas. Counting the postage, these ounce packages cost me just about 5½ cts. each, and I find that each package contains what would make about six and some probably eight packages the size of those for which we usually pay 5 cts.
Bluffton, Mo. S. E. MILLER.



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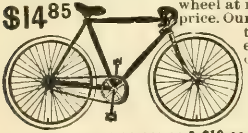

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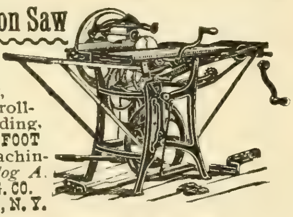

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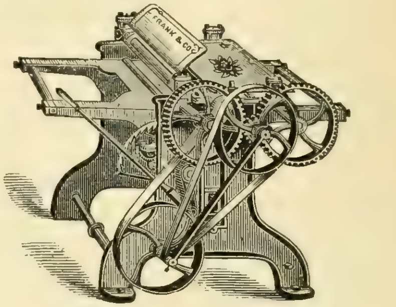

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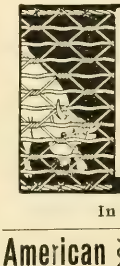

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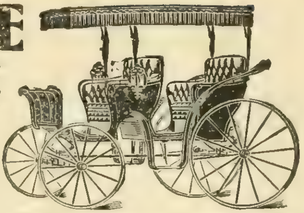

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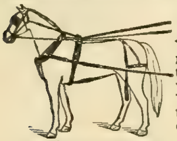


No. 77—Single Surrey Harness. Price, $17.50. Equal to those selling for $10 more.

Elkhart Carriage and Harness Manufacturing Co., Elkhart, Indiana.

In writing, advertisers mention Gleanings.

Photographs Wanted.

For the last three months I have been offering prizes for the best articles. The result is I have a large number of most excellent articles. Until I can make room for these there is no use in offering prizes for more. When I have used the best of those that I have on hand I shall again offer prizes. In the meantime, I should like some good photographs to use as frontispieces in Review. The frontispiece for June is already printed, but later months are not provided for, and to the one who will send me a photograph that I think well enough of to use as a frontispiece in the July Review I will send $5.00 cash. To the sender of any other photograph that I think well enough of to use in some other part of the Review I will send the Review for one year and one of the Superior Stock queens. If you have a neat, picturesque apiary, send me a photograph of it. Send me a photograph of anything pertaining to bee culture that will make a neat picture, or convey some useful information. I received a picture a day or two ago taken in the depths of a maple forest, at a time when there were no leaves on the trees, and away up in the top of a tall maple could be seen a decoy bee-hive. The writer told all, how he arranged the decoy hives, and put them in place, and got them down when occupied, and what a lot of swarms he had caught in this way. The picture and description will be given in the June Review. I mention this simply to show what kind of pictures would be desirable. Some little nook, some peculiar arrangement of your hives, some new style of hive, some swarm-catcher—well, anything that is interesting, picturesque, or imparts useful information; all, of course, relating to bee culture. Get an 8×10 picture if you can; if not, then as large as possible; for the larger the picture the better the cut that can be made from it. Have your photographer use a small diaphram in order that there may be good definition, as much of this is lost in the reproduction.

W. Z. HUTCHINSON, Flint, Mich.

Italian Queens

whose bees are record-breakers as honey-gatherers.

That queen I got of you two years ago was a fine one, the best I ever had. From a daughter of hers I got 120 lbs. box honey last season. The best any other colony did was 72 lbs.
GEORGE B. HOWE, Black River, N. Y.

Fifteen years a honey-producer on a large scale has taught me the value of good queens as well as how to rear them. I breed for honey-gatherers; all cells built by Doolittle plan. Untested, warranted purely mated, 60c; ½ doz., $3.50; dozen, $6.50. Queens sent by return mail. Safe delivery and satisfaction guaranteed in every case, or money refunded. Circular free.

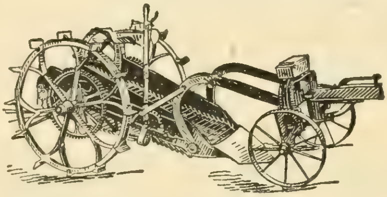
L. H. ROBEY, Worthington, W. Va.

RED-CLOVER WORKERS.

If you are looking for bees that will bring you dollars through the air, my bees will do it. Twenty years' experience. Ask for your money if you are not satisfied. One tested queen, $1.00; untested, 75c; common stock, 65c; breeding queens, $2.50 to $5.00.

G. Routzahn, Menallen, Pennsylvania.

How are You Going to Dig Your Potatoes?



It will be time very soon to dig your potatoes; and, in fact, in some places it is time already. If you want something that will put the potatoes *all* on top of the ground, and do it, too, with one good strong team, you probably can not do any better than to use the Dowden potato-digger, made by the Dowden Mfg. Co., Prairie City, Iowa. Drop them a postal card, and they will cheerfully give you all the particulars, answering every question anybody will probably ask in regard to the machine.

The Modern Farmer and Busy Bee.

Emerson Taylor Abbott, Editor.

A live, up-to-date Farm Journal with a General Farm Department, Dairy, Horticulture, Live-stock, Poultry, Bees, Home and General News. The Editor has had practical experience in every department of farm work. To introduce the paper, it will be sent to New subscribers one year for 25c. Sample copies free. Best Advertising Medium in the Central West. Clubbed with *Gleanings* for $1.00.

ADDRESS

Modern Farmer, St. Joseph, Mo.

1200 FERRETS FOR SALE. Small, medium, and large sized; some trained. **First-class** stock. New price list free

N. A. KNAPP,
Rochester, Lorain County, Ohio.

Adel Bees Did it.

San Louis, Col., March 2, 1900.
Last spring (1899) I ordered queens from 5 different queen-breeders, and among them one from you. The bees from your (Adel) queen gathered more honey than the others all put together. (Signed) S. N. Smith, M. D.

Send for descriptive circular and full price List. Tested queens, each $1.50.

HENRY ALLEY, : Wenham, Mass.

IF YOU NEED QUEENS

We can fill your orders by return mail. To use the words of our customers, with the "largest and finest queens you ever saw." These queens are not only fine looking, but are very prolific, and their bees are the best of honey-gatherers; that means strong colonies and full supers. Now, to prove that this is not all talk, send for our price list of Italian queens, and give us a trial order.

The choicest of tested queens, $1.00 each.
Untested, 75 cts. each; $8.00 per doz.

Safe arrival and satisfaction guaranteed on every order.

J. W. K. SHAW & CO.,
Loreauville, - Louisiana.

WHERE TO LOCATE?

WHY, IN THE TERRITORY
TRAVERSED BY THE . . .

Louisville & Nashville
RAILROAD,
THE
Great Central Southern Trunkline,
IN
KENTUCKY, TENNESSEE,
ALABAMA,
MISSISSIPPI, FLORIDA,
WHERE

Farmers, Fruit-growers,
Stock-raisers, Manufacturers,
Investors, Speculators,
and Money Lenders

will find the greatest chances in the United States to make "big money" by reason of the abundance and cheapness of

Land and Farms,
Timber and Stone,
Iron and Coal,
Labor--Everything!

Free sites, financial assistance, and freedom from taxation, for the manufacturer.

Land and farms at $1.00 per acre and upwards, and 500,000 acres in West Florida that can be taken gratis under U. S. homestead laws.

Stockraising in the Gulf Coast District will make enormous profits.

Half-fare excursions the first and third Tuesdays of each month.

Let us know what you want, and we will tell you how to get it—but don't delay, as the country is filling up rapidly.

Printed matter, maps, and all information free.

Address **R. J. WEMYSS,**
Gen'l Immigration and Industrial Ag't,
LOUISVILLE, KY.

In writing, mention Gleanings.

Our Bees are Busy

now carrying loads and loads of pollen and sweets from the flowers to raise the thousands of new bees for the coming honey crops. We are busy with the orders for Hives, Sections, Foundation, Comb to enable the bees to spread themselves over a surface for rapid work.

Many implements and fixtures to help the people to handle the bees conveniently and with profit.

Drop us a postal card and we will send a catalog of the best and latest Bee-hives, etc.; contains also instructions for successful managing of bees for profit.

: : ROOT'S : :
ABC OF BEE CULTURE

If interested in buying groceries, ask for our wholesale list, and it will also be mailed.

We have sold several carloads of Root's hives and supplies, and can make you the best prices for quantity ordered besides a saving of freight in points adjacent to Evansville.

ADDRESS
Vickery Bros., Evansville, Ind.
WHOLESAAE GROCERS.

DITTMER'S FOUNDATION!
AT WHOLESALE AND RETAIL.

This foundation is made by an absolutely non-dipping process, thereby producing a perfectly clear and pliable foundation that retains the odor and color of beeswax, and is free from dirt. Working wax into foundation for cash, a specialty. Beeswax wanted. A full line of supplies at the very lowest prices, and in any quantity. Best quality and prompt shipment. Send for large illustrated catalog.

GUS DITTMER, : : : AUGUSTA, WIS.

Root's Goods for California.

We have just received a large carload of sections, extractors, smokers, veils, etc., direct from the factory, and are prepared to supply bee-keepers with the same promptly. Do not send a long distance and pay high freights. Write for our prices.

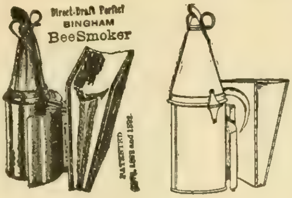
M. R. MADARY, - Fresno, California.

Root's Goods in Kansas.

Carl F. Buck, Augusta, Butler County, Kansas.

D. COOLEY,
Dealer in **BEE-KEEPERS' SUPPLIES,**
KENDALL, MICH.
Root's Goods at Root's Prices. Catalog free.

POULTRY PAPER Twenty or more pages each month, nicely illustrated and UP-TO DATE. Four months trial subscription 10 cents. One year 25 cents. Sample copy Free. Mention this paper. **Inland Poultry Journal, Indianapolis, Ind.**



BINGHAM SMOKER.

DEAR SIR:—Inclosed find $1.75. Please send one brass Smoke-engine. I have one already. It is the best smoker I ever used. Truly yours,
HENRY SCHMIDT, Hutto, Tex.

MADE TO ORDER.

Bingham Brass Smokers

Made of sheet brass, which does not rust or burn out; should last a lifetime. You need one, but they cost 25 cts. more than tin of the same size. The little open cut shows our brass hinge put on the three larger sizes. No wonder Bingham's 4-inch smoke-engine goes without puffing, and does not drop inky drops. The perforated steel fire-grate has 381 holes to air the fuel and support the fire.

Heavy tin smoke engine, 4-inch stove. per mail, $1.50; 3½-inch, $1.10; 3-inch, $1.00; 2½-inch, 90c; 2-inch, 65c. Bingham smokers are the originals, and have all the improvements, and have been the standard of excellence for 22 years. Only three larger ones brass.

T. F. Bingham, : : Farwell, Mich.

1881 **PAGE & LYON MFG. CO.** 1900

We manufacture a full line of the latest BEE-SUPPLIES.

Our motto is, "Perfect Goods and Prompt Shipment."

Send for our new free illustrated catalog.

PAGE & LYON MFG. CO., New London, Wisconsin.

Marshfield Manufacturing Company.

Our specialty is making SECTIONS, and they are the best in the market. Wisconsin basswood is the right kind for them. We have a full line of **BEE-SUPPLIES.** Write for free illustrated catalog and price list.

Marshfield Mfg. Co., Marshfield, Wis.

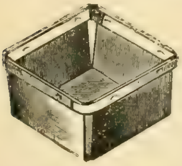
NOW READY!

64-page Catalog of Every Thing Bee-keepers Need.

Illustrated and fully described. Especially valuable to beginners for the information it contains. Send your address on a postal and get it NOW. Established 1884.

J. M. Jenkins, Wetumpka, Alabama.

Fruit Packages of All Kinds.



—ALSO—

BEE-KEEPERS' SUPPLIES. . .

Order your supplies now before the busy season catches you. Price list free. Address

Berlin Fruit-box Co., Berlin Heights, Erie Co., O.

Write Quick for circulars of *Cole's Garden Plow.* Best in use. G. W. Cole, Canton, Ill.

California Queens... Of pure Italian stock. Yards exclusively for queen-rearing. Ten miles from any other bees. Untested, 90c; twelve for $9.00. Write for price list.

H. L. WEEMS, HANFORD, CALIF.

FOR SALE. Good ranch for bees and general farming, 15 miles north of San Diego, California.

G. C. GEARN,
864 Fifth St., San Diego. Calif.

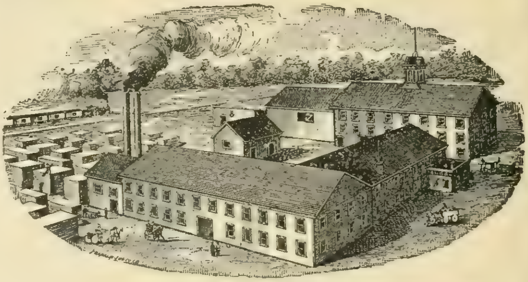
For Sale Cheap. Thirty 1-story Root chaff hives complete, for extracted honey, with empty combs; 20 nucleus hives, 3-frame; 25 supers for comb honey; no disease; in good repair.

W. E. PETERMAN,
Royersford, Montgomery Co., Pa.

BEE-SUPPLIES!

We have the best-equipped factory in the West. Capacity, one carload a day; and carry the largest stock and greatest variety of every thing needed in the apiary, assuring BEST goods at the LOWEST prices, and prompt shipment. We want every bee-keeper to have our FREE ILLUSTRATED CATALOG, and read description of Alternating Hives, Ferguson Supers, etc. *Write at once for a catalog.*

We also manufacture TANKS of either wood or galvanized steel, all sizes, any form, and for all purposes. Price list free.



KRETCHMER MFG. CO., Red Oak, Iowa.

Low-priced Nucleus Colonies.

From July 1st to 15th we will furnish three-frame nuclei colonies, with young laying Italian queens, at $2 50 each; 5 at $2.15 each; 10 at $2.05 each; 20 at $2.00 each. These are just right to build up into good strong colonies, and are a cheap way to increase your stock.

Untested Italian queens, 65c each. Tested queen, $1.00. Catalog of apiarian supplies free.

I. J. Stringham, : 105 Park Pl., : New York.

Apiaries at Glen Cove, Long Island.

Don't Buy Supplies

Until you see my 40th annual catalog. A full line of hives and fixtures best adapted to our New England climate. Also best brands of **Comb Foundation and Section-boxes.** I have also made arrangements to keep quite a general stock of

A. I. Root Co.'s Goods at Their Prices.

Parties desiring these goods can get them of me, and **Save Freight Charges.** Bees, Queens, and Nucleus Colonies from the **very best strains** in America. A 40-page illustrated catalog free. Address

W. W. Cary,
Lyonsville, Mass.

$10.00 REWARD

To the party who sends me the most money for bees and queens betweeu April 1 and Nov. 1, 1900.

HIGH-GRADE STOCK BY RETURN MAIL MY SPECIALTY.

One untested queen, 75c; 6 for $4.25; 12 for $8.00.

One tested queen, $1.25; 6 for $6.50; 12 for $12.00.

One 1-frame nucleus, $1.00; 6 for $5.50; 12 for $10.00.

One 1-frame nucleus and queen, $1.75; 6 for $9.00; 12 for $17.00.

Two, 3, and 4 frame nuclei, 65c per frame to above prices for extra frames wanted.

For each dozen queens or nuclei ordered at above rates I will mail in August a **SELECT TESTED QUEEN.**

ROOT'S GOODS at ROOT'S PRICES,
Plus carload rate freight.

Bees, Honey, and Beeswax bought and sold.

W. O. VICTOR,
Wharton, Texas.

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Honey Column.

CITY MARKETS.

CHICAGO.—Not any comb honey has appeared on the market, but it would sell at 15, as there is a demand for it that can't be supplied for some time hence. Extracted from the Southern States is coming quite freely, but it is not active, and prices are lower. White sells at 6½@7; amber, 6@6½; dark grades, 5@5½. Beeswax, 27.

R. A. BURNETT & Co.,
June 8. 163 S. Water St., Chicago, Ill.

BOSTON.—There is little of interest to note in our honey market. Both supply and demand naturally are very light at this time of the year. Present prices range as follows: Fancy white, 17, with practically none on hand. A No. 1, 15@16; No. 1, 14@15; No. 2, 12@13. Extracted, 6@8½.

BLAKE, SCOTT & LEE,
June 8. 33 Commercial St., Boston, Mass.

NEW YORK.—Comb-honey market is bare, a few small shipments of Southern comb honey arriving; prices nominal, selling on arrival. Extracted-honey market dull, with supply plentiful. Some Florida and other Southern honey arriving, and bringing 6@7½ for Florida, and 55 to 65 per gallon for Southern. Beeswax, 27@28.

CHAS. ISRAEL & BRO.,
June 13. Cor. Canal and Watts Sts., New York.

ALBANY.—Nothing doing of any consequence in the honey market here now. Stock about exhausted. Beeswax steady, 27@28.

McDOUGAL & Co.,
Successors to Chas. McCulloch & Co.,
June 9. Albany, N. Y.

KANSAS CITY.—Very little comb honey in market but what is candied, which is almost unsalable; stock of extracted, light. No beeswax in market; no change in prices since our last quotations.

C. C. CLEMONS & Co.,
June 11. Kansas City, Mo.

WANTED.—Comb and extracted honey. State price, kind, and quantity.

R. A. BURNETT & Co.,
163 South Water St., Chicago, Ill.

FOR SALE.—100 lbs. of good ripe fruit-bloom honey, in cans; 8c per lb.

EDW. SMITH, Carpenter, Madison Co., Ill.

FACTS About Bees.
REVISED EDITION.
How to get
GILT-EDGED HONEY
Send 2c stamp to
THE A. I. ROOT CO.,
Medina, Ohio,
or F. Danzenbaker,
Box 66, Washington, D. C.

Albino Queens. If you want the most prolific queens; if you want the gentlest bees; if you want the best honey-gatherers you ever saw, try my Albinos. Untested queens, $1.00; tested, $1.50.
J. D. GIVENS, Lisbon, Texas.

ITALIAN BEES and QUEENS FOR SALE
Queens, $1.00; bees, by the pound, $1.00; nuclei, two frames, with queen, $2.00; one frame, $1.50; full colonies, $4.00.
MRS. A. A. SIMPSON, Swarts, Pa.

Sharpless Cream Separators—Profitable Dairying.

Wants and Exchange.

WANTED.—A man of good standing and character, a first-class bee-keeper and honey-man, understands queen-rearing, would like to get a position with some large apiarist, or run apiary on shares. Address
C. R. BRITT, Nashville, Tenn.

WANTED.—To buy 500 bu. No. 1 dry rice popcorn.
GEO. G. WILLARD, 270 Pearl St., Cleveland, O.

WANTED.—To exchange new and second-hand bicycles and 1 H. P. gasoline-engine for machinery, tools, etc.; Barnes and Union saws.
ROBT. B. GEDYE, La Salle, Ill.

WANTED. — Steady employment with some bee-keeper, preferably in Colorado, by a young man 18 years old. References given and required.
R. O. CLARK, Lake Crystal, Blue Earth Co., Minn.

WANTED.—To exchange new J. W. Pepper banjo, best quality, for rifle (single-shot or repeater, medium caliber), hand-books of the crafts, or offers in books.
G. F. TUBBS, Annincreek, Penn.

WANTED.—To exchange for property in Texas, or sell, 125 colonies of bees in A. I. Root's 10-frame Simplicity hives, in fine condition and good pasture.
E. SANDFORD & SON, Nokomis, Ill.

WANTED.—To exchange one extractor, Root make, good as new, 2-frame; one honey-vat that holds 2400 lbs.; a lot of Root chaff hives; two comb-baskets, and one uncapping-can. I should like any thing useful in the grocery or any thing else.
G. G. GREEN & SON, Lyons, Ohio.

Special Notices by A. I. Root.

MODERN HOUSE PLANS FOR EVERYBODY.

The above is the title of a new book by the O. Judd Co. It discusses the building of country residences costing from $250 to $8000, including full descriptions and estimates in detail of materials, labor, cost, etc. The book has 250 pages, and illustrations occupy almost every page. I think it ought to be well worth the price, $1.00, postpaid, to anybody who is even considering building a house. It can be mailed from this office.

SEED POTATOES—NO MORE TO BE GIVEN AWAY.

Before the rains came, there was very little demand The price went down so we sold nice potatoes for 25 cents per bushel; seconds, half price; but when the ground got well soaked down to the bottom of the furrow, so many people decided to plant potatoes that the price ran up rapidly, and now good eating potatoes are worth 60 to 75 cents. You see I was in too much of a hurry to *give* them away; but what was my loss is so much gain to the readers of GLEANINGS. New potatoes are worth 40 cts. a peck in the market, and I don't know but I shall have to send out to Wilbur Fenn (Tallmadge, O.), for some of his nicely kept Russets for table use until the new ones are cheaper.

ALL ABOUT HEMP.

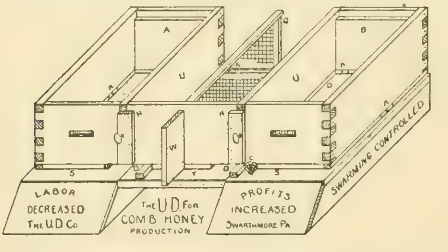
This is another new book by the O. Judd Co. It is a practical treatise on the culture of hemp for seed or for fiber. Hemp will grow in almost any climate, and is considered the standard fiber of the world. The author speaks from personal knowledge when he says that, of all the fiber-bearing plants, hemp is the most universally adapted to the production of soft fine silky fibers and the establishment of a most important industry for the American people. Full details of every thing connected with the hemp plant are given in separate chapters. The book is handsomely illustrated, and contains over 100 pages, substantially bound in cloth. The price is only 50 cents postpaid. It may be ordered from this office.

STRAWBERRY-PLANTS.

Strawberry-plants, potted in jadoo fiber, are now ready to send out at 3 cts. each, or 25 cts. for 10, by express; or 5 cts. each, 40 cts. for 10, by mail. The following is our list of standard varieties:

OLD STANDARD VARIETIES.	NEWER VARIETIES.
Jessie.	Rio.
Haverland (Imp.).	Marshall.
Bubach (Imp.).	Wm. Belt.
Warfield (Imp.).	Margaret.
Sharpless.	Nick Ohmer.
Parker Earle.	Brandywine.

The new berry called New York will be double the above prices. This is much like the Sharpless, fully as sweet, and of rather better shape.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LABOR DECREASED THE U D Co
THE U D. FOR COMB HONEY PRODUCTION
PROFITS INCREASED SWARTHMORE PA
SWARMING CONTROLLED

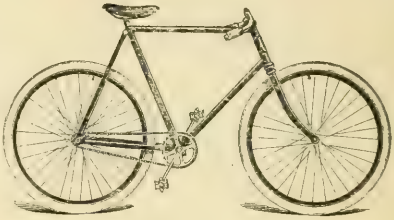
Dov'd Hives Arranged for Comb Honey by the U. D. Plan. Larger Crops, Little Work, Finer Finish, Small Expense, No Swarming.

Send for queen-circular giving details. Our golden-all-over stock is as fine as any in the land. Mated queens in July and August, 75c; tested, $1.00. 12 years a breeder. No supplies for sale.

Swathmore Apiaries, Swathmore, Del. Co., Pa.

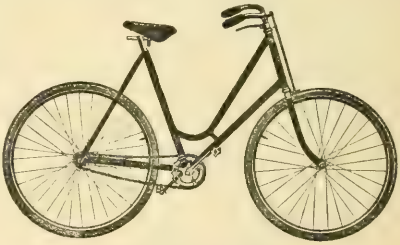
WANTED.—To sell Darling strawberry-plants at 35 cts. per 100, postage paid; ready for immediate delivery. H. FITZ HART, Dalkeith, Fla.

BARGAINS IN BICYCLES.



GENTS' WHEEL.

We recently sold to a large bicycle factory in Akron, Ohio, a carload of crates for shipping their wheels in, and we have taken some wheels in part payment at their lowest jobbing prices. In order to turn these wheels into money quickly we propose offering them to our readers at very nearly cost, or one-third off regular selling prices. We have the wheels in stock, and have tested and examined them carefully, and can recommend them as good medium-grade wheels that will give good service. We went through the factory and saw how they were made and they are well made—no shoddy work about them in any particular. They are guaranteed by the manufacturers for one year from date of sale.



LADIES' WHEEL.

We can furnish either gents' or ladies' pattern. Catalog giving full particulars and specifications will be mailed on application. The price of models 30 and 31 will be $20.00, and we will take pay in beeswax or honey, or give 5 per cent discount for cash with order. If you have honey to exchange, send a sample if it is extracted, and tell how it is put up. If comb, give description and say how packed.

It would take about 200 pounds comb honey or 300 of extracted of fair average grade to pay for a wheel. Don't ship any honey until you first advise us. If interested let us hear from you promptly, for we do not expect to have these wheels long. They are more than one-third gone already right here at home.

THE A. I. ROOT CO., Medina, Ohio.

WANTED.—To sell fifty colonies of bees in good Langstroth hives. Reason, going to Oregon. Must sell by July 1. P. P. COLLIER, Mexico, Mo.

WANTED.—To sell a Morson foot and hand circular saw, in first-class condition for bee-hive work. P. P. COLLIER, Mexico, Mo.

$100-Queen.

Several times in my life have I seriously considered the idea of attempting the development of a superior strain of bees. I knew that it would require years of careful, patient, persistent work in the way of selection, crossing, testing, etc., and there have always seemed to be too many other irons in the fire for me to make room for this one. Some time I may make the attempt; at present, however, I am glad to know that one man, by giving twenty years of his life to the work, has met with a fair measure of success. I have reference to the breeder mentioned in my last advertisement of superior stock. Being a little curious to know along what lines he had worked, I asked him to tell me, and from his letter I make the following extract:

"In regard to the origin of my strain of Italians, I would say that they were developed by selection and crossing. The first Italian queen that I ever possessed was of the Thos. G. Newman stock. The next was of A. I. Root's red-clover stock, purchased in 1881. In 1882 I purchased one of friend Root's best imported queens, for which I paid $6 00. She was a valuable queen indeed, producing workers which were hardy, and regular hustlers for gathering honey. I stocked my apiary with her daughters, saving only a few queens of the other stock to furnish drones. This gave me a direct cross, which, I think, is the secret of my success.

"In '83 I found one of the daughters of the Root imported queen far outstripping everything in the yard in the way of honey-gathering and comb-building; and her bees capped their honey so white that it made it appear the most beautiful comb honey I ever saw. In this queen I had an acquisition. I used her as a breeding-queen. Her bees were not as handsome as the Newman stock; but beautiful HONEY attracted my eye and pocketbook more than fancy bees.

"Permit me to say right here that I fear that about nine out of every ten queen-breeders make the mistake of breeding for COLOR; sacrificing business qualities.

"I love to look at the beautiful golden five-banded Italians; and I wish that they were as good for business as the regular three-banded Italian; but I have tried them and found them sadly wanting.

"The queen from which I am now breeding is a wonderful queen, to say the least. Her bees are excellent honey-gatherers, and came through the past severe winter in fine shape, and are now just BOOMING. I would not part with this queen for **One Hundred Dollars!**"

This breeder has always advertised in a modest, quiet, unassuming sort of way, nothing in proportion to what the quality of his stock would have warranted, and at last I have decided that I can help him, and benefit my readers, at a profit to myself, by advertising these bees in a manner befittingly energetic.

The price of these queens will be $1.50 each. This may seem like a high price, but the man who pays it will make dollars where this breeder and myself make cents; and when you come to read the conditions under which they are sold, it will not seem so high. The queens sent out will all be young queens, just beginning to lay; but, as there are no black bees in the vicinity, it is not likely that any will prove impurely mated. If any queen SHOULD prove to be impurely mated, another will be sent free of charge. Safe arrival in first-class condition will be guaranteed. Instructions for introducing will be sent to each purchaser; and if these instructions are followed, and the queen is lost, another will be sent free of charge. This is not all; if, at any time within two years, a purchaser, for any reason WHATEVER, is not satisfied with his bargain, he can return the queen, and his money will be refunded, and 50 cents extra sent to pay him for his trouble. It will be seen that the purchaser runs NO RISK WHATEVER. If a queen does not arrive in good condition, another is sent. If he loses her in introducing, another is sent. If she should prove impurely mated, another is sent. If the queen proves a poor layer, or the stock does not come up to the expectations, or there is ANY reason why the bargain is not satisfactory, the queen can be returned and the money will be refunded, and the customer fairly well paid for his trouble. I could not make this last promise if I did not KNOW that the stock is REALLY SUPERIOR.

I said that the price would be $1.50 each. There is only one condition under which a queen will be sold for a less price, and that is in connection with an advance subscription to the REVIEW. Any one who has already paid me, or who will pay me $1.00 for the REVIEW for 1900 can have a queen for $1.00. Of course, all arrearages previous to 1900 must be paid up before this offer will hold good. This special offer is made with a view to the getting of new subscribers, and as an inducement to old subscribers to pay up all arrearages and to pay in advance to the end of the year.

W. Z. Hutchinson, Flint, Mich.

BEES THAT GET THE HONEY.

"I bought fifteen queens last year. The six I got from you have about completed their first supers, 30 sections. None of the others have yet entered theirs."
W. W. Erb, Ashland, Oregon, April 22.

The above explains why my customers "stick to me." They like nice gentle bees that pile up the honey. No pains is spared to have *every queen* as *good as possible.* A few last year's select, $2.00. Breeders, $3 to $4.00. Untested, 75 cts.; six for $4.00; dozen, $7.50; for select, add 25 cts. each. No culls sent out. Circular free. See GLEANINGS, April 15.

J. B. CASE, Port Orange, Fla.

IMPROVE YOUR BEES

by buying some of Hyde's improved strains of either golden Italians, three-band Italians, or Holy Lands. We know what good queens mean, hence breed for honey, gentleness, etc. Send for 20-page circular of valuable information for the honey-producer. We do not rear poor queens, and do not compete with cheap breeders. Our prices, either race your choice: Untested, before June 1, $1.00; 6 for $5.00. Tested, $1.50. After June 1, untested, 75c; 6 for $4.25. Tested, $1.25. Discount for quantities. Breeding-queens a specialty.

N. B.—For every $10.00 sent us for queens, we will, during August or September, mail one select tested queen, or for every $25.00 one fine breeder.

O. P. HYDE & SON, Hutto, Texas.

June Queens! June Prices!

Untested, 75c; $7.00 per dozen. Tested, $1.00 each. From our superior strain of 3-band Italians, the best of honey-gatherers. Large prolific queens, mothers of strong colonies. Send for our price list, and see what others say. Orders filled promptly, and satisfaction guaranteed.

J. W. K. Shaw & Co., Loreauville, La.

RED-CLOVER WORKERS.

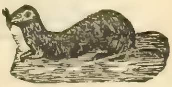
One tested, $1; untested, 75c; fine golden queens, 65c; fine virgin queens, 40c. Send me your order.

G. Routzahn, Menallen, Pa.

For Sale. Twenty-eight colonies, two of which are queenless, Italian and mixed; good workers; 12 empty Dovetailed hives, good; 60 supers for same, new; 7 good Langstroth Simplicity hives, and every thing in connection with the apiary. Make an offer. Must be sold immediately.

WM. MANNING, 55 W. 5th Ave., Columbus, O.

1200 FERRETS FOR SALE. Small, medium, and large sized; some trained. **First-class** stock. New price list free



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Rochester, Lorain County, Ohio.

Wm. A. Selser, Honey Expert,

Office of The A. I. Root Company.

10 Vine St., Philadelphia, Penn.

We have in stock about 100 second-hand 60-pound cans, two in a case. Cans sound and in good condition, cases a little soiled; will sell, while they last, at 35 cts. a case.

2000 2d-hand 60-lb. Cans.

We have about 2000 screw-cap second-hand 60-pound tin cans for holding honey, all practically as good as new, and two cans in a box. We can ship promptly, so long as they last, at these low prices, f. o. b. Chicago:

10 Boxes, 2 Cans in Box, 50c per Box; 20 Boxes or More, 45c per Box.

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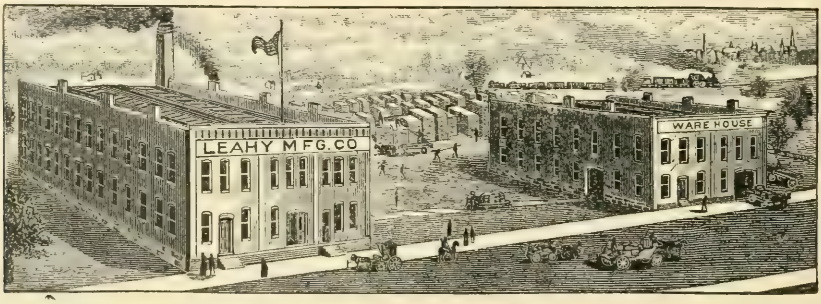

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GLEANINGS IN BEE CULTURE
A Journal Devoted To Bees and Honey and Home Interests.
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STRAY STRAWS FROM DR. C. C. MILLER

DID YOU EVER notice that all basswood leaves are lop-sided—*oblique*, the botanists call it? The picture in the A B C shows it plainly, but I suspect not one in ten ever noticed it.

C. DAVENPORT gives in *American Bee Journal* a kink worth considering: Keep hives intended for swarms in a cool, airy place. A swarm put into a hot hive that has been standing in the sun is much more likely to desert.

THROUGH MY FAULT or the printer's, more is claimed for the Bosnian bees, in a Straw, than the most extravagant claims I have met. I wrote, or intended to write, "sting less, work more," and the types make it "stingless," p. 425.

H. L. JONES, I have respect both for scientists and practical men (including the Jones family in the latter), and when they disagree it's a good plan to lean toward the safe side, so I always use very young larvæ for queen-rearing, especially since the bees, when left to their own choice, do not select the older larvæ.

NINE CHANCES in ten, these bees of E. B. Beecher's, p. 441, decamped because a very hot day came on after they had got a start in comb and eggs. Keeping the hive shaded and cool till the bees have too much to leave, is important. If a frame of brood is given, they can hardly afford to leave that. [I am inclined to think you are right.—ED.]

ONE OF THE FIRST and surest signs of laying workers is to find a number of eggs in a queen-cell. But at length I've found an exception. I found a queen-cell with five eggs, and on the same comb another with six, and in the hive was one of the best queens I ever had. She is three years old, and is laying two and occasionally three eggs in a cell, no doubt because the colony is purposely small and she hasn't enough room.

ACCORDING to Prof. Lazenby, we must readjust our ideas about the work of bees, for he says he never finds bees gathering pollen and honey on the same trip. And there seems to be an unequal division of labor, for those that gather honey take twice as heavy loads as the pollen-gatherers. May be it's harder work to carry at arm's length, as the pollen is carried—or is it at leg's length?

THE PLAN you give, p. 444, Mr. Editor, for killing cross bees, is the one I've used for a generation; but I never had sense enough to tell of it. [If you had told it, doctor, you would have saved me and others a lot of annoyance. I suspect it is something like your "gobacks" I have described elsewhere in this issue. Don't you remember that you were surprised that I did not know about them, and yet it was a familiar household term in your home?—ED.]

I ARISE to move a vote of thanks to that bright-brained tar-heel, W. H. Pridgen. I've been trying his cell-cups and nurseries, and they're fine. Larvæ transferred with cocoon into the small-bottomed cups are very promptly accepted, this plan having advantages over that of having to use royal jelly. When the cocoons are transferred, there is no question about the jelly being of the right consistency. [I second your motion. But I suspect it was Willie Atchley who first thought of the scheme of transferring cocoons into small-bottom cell-cups.—ED.]

THAT SUMMARY of the big-little-hive controversy in *Bienenzucht* left the matter just where it is left in American bee-journals, arguments on both sides given, and you can take your choice. [The question in this country seems to have simmered itself down to this: That some localities are better adapted for the large hives, and others for small ones. The training of the men, coupled with their prejudices, has a good deal to do with it, so that we shall never see the day when either the small or the large hive will be universally adopted.—ED.]

DON'T GET into a row with my friend Burrel, Mr. Editor, p. 442. He's all right in what he says. Bees put pollen in the combs already drawn out, whether in hive or super, if only in one place. So he puts foundation in the super till foundation below is drawn out enough to catch the pollen, *then* puts on the partly filled sections from the old hive. Friend Burrel, if you want comb in the brood-chamber without having it bulge into the foundation, put a dummy between the combs and the foundation. See if it doesn't work as well as a dummy at the side. [P-e-r-h-a-p-s you are right—I don't know.—ED.]

PROF. LAZENBY makes a statement that would have brought "aid and comfort" to me a few years ago. I insisted bees didn't work on strawberry-blossoms at all. He comes pretty near that, saying they work on weeds among strawberries, seldom touching the latter. I was obliged to admit their doing a little on strawberries. Well, this year the bees take a mischievous delight in showing me I don't know when I think I do. Strawberries by the acre on my place (Ghordis Stull raises them) show the bees working quite busily on them every day. Perhaps another year Prof. L. may find different results. [Nearly every spring our bees are found to be working on strawberry-blossoms. This was especially noticeable a year ago, and it seemed as if every blossom (and there were thousands of them) in our strawberry-bed had a bee on it.—ED.]

"THREE YEARS AGO I extracted about 2000 pounds of nearly pure dandelion honey before white clover commenced to yield," says C. Davenport, in *American Bee Journal*. He says the honey is dark, rank-tasting, fit only for brood-rearing, or to sell for manufacturing purposes. (Doolittle says it is splendid when a year or two old.) Formerly dandelion bloom was about gone soon after fruit bloom, but it has increased so much that now there is too much of it, and the honey is sometimes mixed with that of white clover. About Marengo it has increased to such an extent that it blooms till fall frosts, but I doubt whether the bees work on it much late in the season. [I am glad to know that there are some localities where the bees gather honey from dandelions. They may get a very little from that source here, but I have my doubts about it. But I have seen bees by the hundreds carrying home dandelion *pollen*; and Prof. Lazenby says that bees do not carry both honey and pollen at the same time.—ED.]

A LITTLE MIXED seems the matter of jelly or no jelly in cell-cups. Doesn't it depend on circumstances? I have tried cells without jelly, and had not one accepted. I have tried cells without jelly, and have had them accepted just as well as with jelly. In the latter case the larva was transferred with the bottom part of the cocoon, in a cell-cup specially built for it. In the ordinary Doolittle cups, I don't believe I can get best results without jelly. By transferring cocoon and all, there is no need of jelly; and it is certain that the tiny grub takes with it a ration of exactly the right consistency. [Nothing mixed at all, doctor. Mr. Wardell (perhaps he is prejudiced in favor of his old way) prefers Doolittle cups with large bottoms, with royal jelly. He says he doesn't like to slice across a brood-comb, mutilating larvæ of all ages, and young bees, that cups with large bottoms and royal jelly make him really less labor. You and he agree that with such cups royal jelly is almost a necessity; and he agrees that cups with cocoons, without royal jelly, will be accepted. —ED.]

H. M. JAMESON, in *Review*, thinks I mislead by saying that hives, etc., are cheap enough. I don't know that I ever said so, for I don't know how much profit there is on them; but I know that I can buy them cheaper than I can make them. He says he can pay double price for lumber, and with a foot-power saw make $3.50 a day cutting and rabbeting hives. Why wouldn't it be a good plan for him to go into the business and furnish hives at lower rates? [If Mr. Jameson is a good mechanic (and there is only about one bee-keeper in a hundred who is) he can, perhaps, make his own hives; but even then I hardly think they would be as accurate as factory-made hives. Perhaps he could make $3.50 a day; but a shop using power usually estimates the cost of labor, power, machinery, and shop room, at 40 cts. per hour. That he could pay double price for the lumber depends on where he is located; for sometimes freight is a big item. But I'll bet him a cookey that the lumber he uses will not be equal to that found in the factory goods. If every one could do as well it would pay to buy foot-power saws and make one's own hives. But hundreds who have tried it have given it up.—ED.]

"THE BEE, quick as thought in the execution of her attack, nevertheless does not inflict a wound until she has examined the nature of the surface to be punctured, using a pair of very beautiful organs called palpi, elaborately provided with feeling-hairs and thin nerve ends. She is never so mad with anger but that she has method in her madness, . . . and some substances, applied to the skin, will almost, if not absolutely, save it from attack."—Cheshire, Vol. I., p. 191. This for the consideration of ye editor. [While I have great admiration for Mr. Cheshire, yet his own statements, viewed in the light of present developments on many a question, show that he is by no means infallible. I need only to refer to Prof. Cook or Mr. Cowan for proof of it. On the point under consideration I think he is clearly wrong. If he had been a more practical man, and had spent more time in the apiary, I think he would have been convinced that there is no substance under the heavens, when applied to the skin, that would "almost, if not absolutely, save it from attack." Cyprians and cross hybrids will make a dart like a bullet; and the idea that they stop to *feel* before they apply their stings is amusing I do not deny that there are certain organs called palpi; neither would I deny that bees do *sometimes* feel around for a good place to do their job; but that a bee is "never so mad" that it does not feel for a good spot is putting it altogether too strongly. Now, look here, doctor. I feel mad at you because you did not give your *own* opinion. Here you are, leaving me to fight it out with Cheshire, and he is not alive to defend himself.—ED.]

PICKINGS

FROM OUR NEIGHBOR'S FIELDS.

BY "STENOG."

Hot and wet, toil and sweat,
Summer showers at last !
'Mid the flowers and shady bowers
Bees are working fast.

BRITISH BEE JOURNAL.

This journal is always interesting, bees or no bees. Its fine pictures which have been for so long a time a marked feature of it are continually giving one a glimpse into the rural and domestic side of English life so beautifully described by Washington Irving in his Sketch-book. In the issue for May 24 is a picture of an old-time bee-shelter at Heaverham. In a brick wall adjoining the house may be seen what look like the mouths of four bake-ovens, two above two. In each of these is a straw hive, seemingly independent of the weather. But after all I infer the hives are empty, as the increased travel on that road has made the business unprofitable. But it is a strange sight to see bee life so intimately connected with human affairs.

◆

In a previous issue, in speaking of how to sell honey, one man said he would put up a sign, "Honey for Sale from our own Bees," and spend the best part of Saturday and Sunday in selling honey to passers-by. Mr. Quartermain, of Tenby, says, "I take the strongest possible objection to devoting the best part of Sunday in selling honey to the passers-by, for Sunday is a day of holy rest, not one for trade purposes. We have too much Sunday trading, without adding to the mischievous practice."

◆

Concerning a scarcity of water, one correspondent says: "We are hoping for rain, which is badly wanted by every one and by every kind of crop. Water is scarce on some farms, the ponds being empty, and farmers are compelled to draw from deep wells, while, labor being scarce, most farms are short of hands, so there is no prospect of an improvement in that direction. All that the city councils have hitherto done in teaching gardening, fruit-growing, dairying, and bee-keeping does not seem to stem the exodus of the countryman toward the towns, so that the older generation are gradually dying off, and those of the growing generation are looking for 'something better than farm work,' so they say. I think the matter will have to be dealt with by our legislature soon or the consequences will be serious in the country districts. Our bee-keeping industry, notwithstanding its apparent growth as shown by statistics, is gradually declining among agricultural laborers, new methods with modern appliances being beyond the grasp of the laborer, and the old-style crock holding 15 to 30 lbs. of honey is practically unsalable at the present time."

AMERICAN BEE JOURNAL.

An essay read by Herbert Clute at the Wisconsin convention gives one an idea of the immense amount of basswood still to be found in that State, and especially in Clark Co. He says that within two miles of him 4000 basswood-trees fit for lumber may be found, besides the crooked and small ones. Mr. Clute says the bee-pasture will improve as the land is cleared up, as they now have more basswood bloom than the bees can handle.

◆

One correspondent in Dr. Miller's department says that bumble-bees are so plentiful this year that they drove the honey-bees off the best honey-producing plants. He and his family then went to work to destroy the big fellows, and killed 614 queens in two days. That's what I call stupidity if not a great sin. The usefulness of these big bees is unquestionably great, and they should be protected instead of being killed. The whole thing is on a par with the farmer who shot all the swallows around his barn because they took his mud to make nests. In speaking of gill-over-the-ground, the same correspondent says that bumble-bees and honey-bees fill themselves so full of nectar from this plant that they can not fly. But I wish the plant itself could and would fly into the ocean. It's a sticker around here.

◆

Selah Merrill, U. S. consul at Jerusalem, gives an interesting report of Mr. Baldensperger's experience with bees in Syria. Among the drawbacks to apiculture there, may be mentioned Turkish taxation, every hive being taxed 10 cents, and every door, window, and hole in the hive being counted as a hive. Then come large yellow hornets, sparrows, swallows, bee-eaters, badgers, rats, lizards, and moths. But the greatest enemy is man. Where an apiary is set down, the sheiks of the nearest villages like to receive a certain amount of honey, otherwise the bees will be stolen. When a hive is stolen, fire, and sometimes water, is used to destroy them. About a tenth of the honey produced must be given away to induce people not to take the hives. When the hives are being carried from one place to another on camels the Arabs will occasionally steal the animals. These thieves are the descendants of the Midianites of the Bible—those who stole the wheat of Gideon's father. It's a pity Gideon has not been disciplining them in his peculiar way ever since.

AMERICAN BEE-KEEPER.

In the *Amer. Bee Journal* Mr. Rockenback tells a sad story of foul brood in Cuba, and Harry Howe adds, "Foul brood is really much worse than has been described in the papers. Nearly every apiary in Cuba has it." Mr. Hill admits foul brood is prevalent there, but says it is not universal. Colonel Viete, an extensive honey-producer there, says, "I am surprised to hear so much about foul brood. In this part of the island we have none, and my bees are doing beautifully."

GENERAL CORRESPONDENCE

RELATION OF THE HONEY-BEE TO AGRICULTURE.

What Fruits are Most Visited by Bees?

BY F. GREINER.

The fruit-growers of the present day are becoming more and more convinced of the importance of the part the honey-bee plays in the pollination and cross-pollination of the blossoms of our common cultivated fruits, and that to such an extent that already many orchardists have either themselves engaged in bee culture or have induced bee-keepers to establish apiaries in their localities. The bee-keeping specialist is naturally interested in this matter, although he is viewing it from a different standpoint. It interests him intensely to know from what special fruit-blossoms his bees fill their hives quickest with honey, and from what source they get the most and the earliest pollen, etc. To bring some facts relating to this matter to the notice of the bee-keepers would, it seems to me, be a benefit to them in more than one way; and what I shall say in the following are the observations of noted men as well as our own in orchard and field.

Prof. Lazenby stated before the Ohio Horticultural Society that the apricot was the first of all fruits to bloom, and that the honey-bees would work on these blossoms to some extent. Closely following the apricot he finds the different plum varieties blooming, the Japanese plums blossoming first. All the Japanese varieties are extremely prolific, and from the second and third year after their setting they bloom and bear profusely every year. I am growing Japanese plums and others, and I can truthfully say their tendency to bear fruit is marvelous. Every little twig is so covered with blossoms that they have not room enough to expand. The bees fairly roar in the trees when the weather is suitable.

While plowing and working among my trees I have worked in a regular swarm of bees to my own delight. According to Prof. Lazenby the plum-blossoms yield quite a little honey. The European varieties continue in the bloom, and bees sometimes work for a period of over three weeks on plum-blossoms where the different varieties are grown.

Next, and before the plums are done blooming, the sweet cherries, the sour cherries, the pears, and the peaches furnish a feast for the bees in the order named. Last comes the apple. The apple-bloom is perhaps of the greatest importance to the bee-keeper for several reasons. Apple-trees are most numerous, their blossoms yield more honey than any other fruit-blossoms, the weather is generally more favorable, and the bloom lasts for about two weeks.

Prof. Lazenby observed that plum-blossoms are more freely visited by bees than cherries; cherry-blossoms, again, more frequently than apple; these more frequently than peach; to pear-blossoms the least attention was paid of any of the fruits. He also noted that, during the time plums and cherries were in bloom, the secretion of honey was gradually increasing from morning to afternoon. He counted the bees that were returning to their hives, and found that, between the hours of 8 and 9, in 30 minutes 1266 pollen-laden bees entered their hives (two in number) against 564 honey-laden bees. Between 11 and 12, in 30 minutes 418 pollen-laden bees entered their hives against 2362 honey-laden bees, and between 2 and 3 (afternoon), in 30 minutes 132 pollen-laden bees only were counted against 5154 bees loaded with honey. It seems the bees neglected the pollen in favor of the honey toward and during the afternoon.

I have often noticed that honey-bees are very apt to do that very same thing during any bountiful honey-flow. When the basswood honey-flow is at its best, scarcely any pollen is carried into the hives, although plenty may be had. There seems to be quite a difference in this respect between different colonies. Prof. Lazenby observed, May 7, during apple-bloom, out of 702 in-coming bees of one hive, 164 carried pollen, 538 carried honey; from 825 in-coming bees of another hive, 606 carried pollen and only 219 carried honey—the one colony evidently going in for pollen principally, the other one for honey. It would have been interesting had we been told the exact condition of each of these two colonies as to the amount of brood and open brood; there might also have been a short supply of pollen in one hive, a scant supply of honey in the other, inducing the bees of these two colonies to gather that which was needed most in their respective households. But these are only speculations.

Among the small fruits the professor noticed that red raspberries (blossoms) were most frequently visited by our bees. After those the most attention was paid to the blackberry-blossoms, next to black raspberries, then gooseberries, then currants, and finally strawberries, the latter being almost totally neglected by bees.

I consider the red and black raspberries very valuable as honey-producers in my own locality. There are many extensive fields of black raspberries within reach of my bees, and these fields are fairly roaring at the time of the bloom. The gain in the hives is noticeable, and sometimes sections are filled with a rather dark inferior honey.

If we were to mark the different common fruit-plants on a scale of ten, showing the comparative number of flowers of each visited by bees, the grading would be as follows, according to Prof. Lazenby:

Red raspberry, 9.5; blackberry, 9; plum, 9; cherry, 8.5; black raspberry, 8; apple, 6; gooseberry, 4.5; peach, 3.5; pear, 3; currant, 2; strawberry, 1.

THE WEIGHT OF BEES AND THEIR LOADS.

To the following statements of Prof. Lazenby I now wish to draw the reader's attention, especially as they contain something new to most of us, and something very interesting indeed.

On the morning of May 17 (probably during the apple-bloom) 16 bees were caught as they came *from* their hives. They were immediately killed and weighed, each one separately. It was found their weights ranged from .092 gram down to .071 gram.

Right here, again, I will say that it would be interesting to know why this difference between outgoing (empty?) bees. I wish the professor had made a post-mortem examination of these heavy bees. This might have put us in a better position to draw correct conclusions from his observations. His figures do not quite satisfy me. He figures out the average weight of an empty bee at .079 gram. I should not be surprised if that was reckoning it too high. However, there may be that difference of .021 gram between individual bees of one queen's progeny.

The professor, after finding out the weight of outgoing (empty) bees caught 16 incoming bees loaded with honey, and took their weight, each one separately. The heaviest weighed .122 gram, the lightest .073; the average he found to be .094 gram. This makes the average load of honey weigh .015 gram, or about 19 per cent (one-fifth) of the bee's whole weight.

Pollen-laden bees were also caught, killed, and their separate weights ascertained, the same ranging from .075 gram to .098 gram, with an average of .085 gram. Deducting from this the average weight of the outgoing bee we find the average load of pollen that one bee carries to be .006 gram.

On account of the great difference in the weights of the outgoing bees, this manner of reckoning is probably not quite reliable, but it is the best we can do at present.

By his further observations, and by careful counting, the professor is lead to believe that a bee does not gather pollen and honey at the same time, or, better said, on one trip. He has killed scores of pollen-laden bees as they entered their hives, and never found any more honey than one is likely to find in worker-bees when they *leave* their hive.

Another of his observations may be of interest. He stated that, by painstaking counting, he found pollen-gathering bees to visit from 3 to 5 times as many blossoms as honey-gatherers.

BEES, AND SPRAYING FRUIT-BLOOM WITH ARSENITES.

In the States where bee-keepers are awake to their interests they have, I believe, succeeded in having laws passed against spraying fruit-trees while in bloom. This they accomplished on the mere strength of their *belief* that bees would be and had been poisoned by visiting sprayed bloom. Positive proof that bees were ever poisoned was really lacking. But, as Prof. A. J. Cook says, "We spray potato-vines with poison, and the bugs disappear. We do not make a post-mortem examination to find out whether the dead bugs have Paris green in their stomachs, but are satisfied with the apparent result of our spraying, and the fact *that the bugs are gone.*"

We have taken the same ground in the case of bees. *The trees had been sprayed, and the bees have died as the result.* Many scientists, however, have not been satisfied with our opiniative proof. They refuse to accept what bee-keepers thought they had good reason to believe. The Ohio Agricultural Experiment Station has now published the experiments they have made in order to test the matter, and they hereby furnish the missing link in the chain of proof now available. How minutely and extensively the work was carried out may be judged from the few following facts: Separate analyses were made of thorax, posterior legs, and abdomens of bees which were known (or at least strongly suspected) to have died from arsenical poisoning while working on the sprayed bloom. The bees were first washed in three different ammonia waters to ascertain whether any poison adhered to the bees' exteriors, and to remove such. In some cases slight traces of arsenic were found in the ammonia water. Thoraxes and also posterior legs, with the pollen adhering, analyzed gave *no traces of arsenic.* This is contrary to my expectations. I should surely expect the pollen to contain poison as well as the honey. In stored honey taken from nearly ruined colonies, no traces of arsenic could be detected; but the abdomens of bees analyzed revealed unmistakable traces of the poison.

In summing up, the station says: "We believe that we have the first conclusive proof of the effect on bees of the use of arsenical poisons in the orchard while trees are in bloom. We can see no other conclusion that can be drawn from the result of our experiments than that bees are liable to be poisoned by spraying the bloom of fruit-trees, the liability increasing in proportion as the weather is favorable for the activity of the bees; that all bloom must have fallen from the trees before the danger will have ceased."

The bee keepers of our land owe the Experiment Station of Ohio a vote of thanks.

One more point I wish the station had not been silent on. I should like to know the whole truth. It would interest me to know how much of a crop these trees, sprayed while in bloom, bore as compared with the others not so sprayed. Our esteemed friend E. T. Abbott said at the Buffalo convention, that a fruit-blossom is so delicate it can not even bear a drenching of water, much less of Bordeaux or Paris-green mixture. If that is true, spraying it would necessarily and totally ruin the fruit crop, and no sensible fruit-grower would try that more than once. I, at the same time, gave expression to my view, that spraying the bloom might not prove to be so damaging to the fruit prospects as it would be useless and unnecessary work. The Ohio Experiment Station should be in position to decide that point. If the fruit-grower could be made to believe that he would injure his fruit crop by spraying the bloom, then, of course, he would not spray. But I believe it is always best not to exaggerate, but stay within the limits of truth, if we know what that is.

Naples, N. Y., March 26.

SHADE FOR HIVES.

Is an Excess of it Detrimental to the Ripening of the Honey? a New Phase of the Question.

BY A. NORTON.

Friend Root: — Some time last fall you gave a short editorial in favor of shade for hives. The point that you advanced in this instance was that shade makes cooler hives, and, therefore, calls for a smaller force of "fanners to keep up the ventilating air currents." I thought considerably of this at the time of reading it, and have quite often thought of it since. Please do not think I am antagonizing your views. It seems as if all the other eminent apiarists are with you. But I should like to suggest that some system of experiments be tried, to establish a delimiting point of mean average temperature, warmer than which shade is beneficial, and cooler than which it is undesirable. A definite knowledge of this part of the question would go far to define the influence of "locality." These principles may be safely stated in general terms regarding the force of "fanners" and the ventilating air currents: — 1. With a cooler temperature in and around the hive, even though the ventilating currents should remain unchanged, there would result a corresponding decrease in the rate of evaporation in the hive. 2. With a lessened ventilating current, even though the temperature should remain unchanged, there would result a corresponding decrease in the rate of evaporation. 3 (and consequently). With the temperature cooler, and the ventilating current lessened both at once, as per the supposition of your editorial, there would result a double decrease in the rate of evaporation inside. Therefore the honey would ripen thinner, or would need a longer time to ripen.

Now, there should be a point above which the temperature of air in the shade, together with its degree of dryness, sufficient evaporation in shaded hives, and below which they should be in the sun. And then, given the mean average daytime temperature of a given month at a given place, one could feel pretty sure how he should have his hives. I am not where such experiments could be made. The average summer temperature at Monterey is so cool, and the difference between summer and winter so small, that there is not the variation needed for experiment in this line. But, as many apiarists of experimental tendencies live in climates of great summer heat they could test the matter in spring, summer, and fall, thus having all degrees of variation to facilitate observations. I am satisfied that for Monterey, and even much warmer summer climates, I should always want hives in the open sunshine. And I think I have demonstrated in my own experience, not only here but in branch canyons of the Salinas Valley, where summer weather is very much warmer, that the same *bees* that in the sunshine will bear manipulation with perfect calmness will *very* often in the shade resent handling, with great

DR. MILLER'S OUT-YARD; BEES IN THEIR TEMPORARY LOCATION PREPARATORY TO BEING REMOVED TO THEIR SUMMER QUARTERS.—SEE EDITORIALS.

viciousness. I well remember how, in past years, Mr. Wilkin used to keep his numerous colonies without shade in hot inland canyons where the temperature in heated spells would be 110 to 115 in the shade. In the hottest weather he would ventilate at the covers. I remember a few cases of melting down; but the percentage was very small. So far as evaporation in the shade is concerned, it would go on better in the dry air of his Sespe canyon, for instance, than in the humid warm summer air of the Eastern States. But I bring up Mr. Wilkin's case for illustration, not for argument against you. He might now agree with you. There must be some basis for shaping definite principles regarding shade and sunshine whereby there need be no disagreement or vagueness of views, each applying the principles to the different conditions of climate, and thus harmonizing what would otherwise seem to be opposing views.

Monterey, Cal., May 2.

[Of course, this is a question that hinges a good deal on locality. In some places, perhaps shade would be a positive detriment—especially so if it reduces the number of fanners that would be required to keep up the requisite amount of evaporation of the nectar. But in this locality, and for most localities, I do not believe there would be any danger along these lines. Here, for instance, the summers are very warm, and we have been told they are almost as warm as they are in the extreme south. This, taken together with the sultriness of the atmosphere, and the almost entire absence of breeze at times, very often causes the bees to hang out in bunches in front of the hives if they are not properly protected by shade or sufficiently wide entrances. Many and many a time I have seen these single-walled hives out in the open, that had almost all the bees on the outside of the hive. There were a few fanners at work, but they seemed to be discouraged. A cluster of bees would hang all over the entrance, and nearly close it. In this way they would loaf for several days, and pretty soon the swarming fever comes on, and then they are good for nothing the rest of the season or until they have swarmed.

As you probably know, I do not advocate excessive shade. I would have the hives in our locality in a grove of young trees, or moderate-sized ones, and so situated that the rays of the sun will strike the hives at about nine o'clock and again at three. As our trees do not leave out until the middle of May, the automatic shade does not come on before it is required. In a word, I have advocated shade for localities like our own, to keep the bees from boiling out in front of the hive, and hanging in great clusters loafing, and clogging the entrance. For that reason I have advocated wider entrances and moderate shade. Under these conditions, if I have made no mistake in my observations, the fanners can do their work comfortably and easily, and a full force of them will keep up the air currents, and all the bees will be either in the hives or out in the fields.

Where we have colonies out in the open, we arrange to have them in double-walled hives, with a chaff cushion on top; and I am not sure but this arrangement, all things considered, is the best for comb honey; for the double walls with packing on top retain the heat over night, permitting the bees to keep right on with their work in the supers. But such hives are, to a greater or less extent, unwieldy, inconvenient to move to outyards, take up room in the apiary, and, more than all, are more expensive.—Ed.]

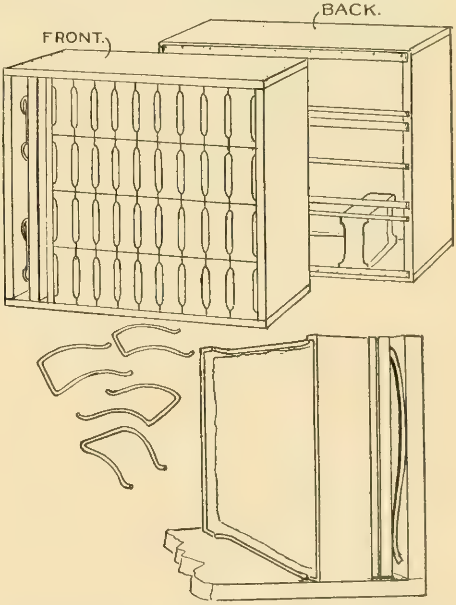
SUPER SPRINGS, INTRODUCING-CAGES, ETC.

When and by Whom were they Introduced? a Practical Form of Super Spring.

BY W. D. WRIGHT.

Some time ago I noticed in GLEANINGS that there was some question as to who originated super springs. I will not attempt to decide that point. I will say, however, that I first saw them in use by the Hetheringtons, some time before I used them. These were flat steel springs, similar to a piece of clock-spring; and, if I remember correctly, they were about ½ or ⅝ inch wide, and fastened to the follower. The round wire spring was original with me (and may have been with others also), and I shall claim priority until antedated

Mr. Danzenbaker probably saw my clamp-spring at Mr. Mendleson's, as he took a sample home with him when he returned to California from the East, a few years ago, and expressed himself as much pleased with them.



I send you a photograph of the identical clamps, springs, and separators, built by me in the spring of 1883. At that time I constructed about 300 of these clamps, have used them more or less ever since, and have used no other for several years past. According to recent developement I am not so much out of date after all. For my use I would not have the spring secured to either the clamp or follower, on account of the inconvenience of getting the follower or the last row of sections in or out of clamp, and especially out, after being glued fast by the bees. With my arrangement I can lift out the spring, tip the follower back against the side of the clamp, and manipulate sections readily, which is sometimes desirable, especially between the clover and buckwheat honey crops, when honey is but partially finished. It is also more convenient in filling or emptying clamps generally, and, to my mind, greatly overbalances the inconvenience of having a loose spring. I allow ½ to ⅝ inch space for a spring behind the follower, and have a strip of tin secured to the bottom of the clamp to keep bees out of this space, so that follower is not glued to clamp on outside, neither are the springs glued fast. My custom is to place the convex side of the spring next to the clamp, and with ends against the follower, which brings an equal pressure to bear against the top and bottom of the same. The pressure is sufficient to hold the sections in place when the clamp is inverted, and I usually transport them in that position when filled with foundation, in going to out-apiaries.

My springs were made of No. 9 steel wire, coppered the same as that used for bed-springs, cut to proper length, and bent in shape with a small steel implement.

These clamps were originally made for the 5¼×5¼×2 sections, placed in three rows of 8 sections each; but since *they* have passed, I have substituted four rows, of 9 each, of $3\frac{15}{16}$×5¼×$1\frac{11}{16}$ sections, which are practically the same as the prevailing tall pound section; and the only objection that I know of to their being an odd size is the slight additional cost.

The change to this size of section necessitated additional strips of tin on bottom of clamp at the junction of the rows. My separators are of pine and basswood, ⅛ inch, mill dressed two sides, and with insets for entrances as shown. I nail a separator to the clamp, and also to the follower, to form an entrance to the outer side of all end sections, which is done not only for the purpose of hastening work in the same, but also for providing free escape for the bees in smoking them out when removing clamps from the hives.

Apparently a number of bee-keepers who have recently described the wire-cloth-surface queen-cage for introducing queens are not aware that it was given to the public nearly twenty years ago, in proof of which statement please refer to the following article, reproduced from the *Bee-keepers' Exchange* for January, 1881, published by J. H. Nellis, at Canajoharie, N. Y. I consider the square cage strong enough for its purpose, if made of wire of suitable size, and superior for ready observation, to any cage covered all over its principal surface with wax, *a la* Benton. The ordinary wire cloth used for fly or bee screens is too light for any form of this cage, as the long raveled ends of wire are too easily bent out of shape.

Mr. Frank Benton, in his Manual of Apiculture, published by the U. S. Department of Agriculture, in 1896, gives an illustration of this cage in circular form, and recommends pressing the ends of the cage firmly against the adjoining comb, that it might not be pulled loose by the bees clustering heavily upon it, which precaution is well with a cage of the size then shown—viz., 1⅜ in diameter, and with ¾-inch projection beyond the comb surface; however, I have never had any trouble in this respect with the cage made and applied to the comb as directed in the article referred to, besides having the advantage of normal spacing of combs, which is very desirable when they contain much honey if the cage is to remain in the hive for any length of time. Mr. A. Norton, in Oct. 15, 1899, GLEANINGS, proposed making an opening with a gate in one side of this cage, to avoid mutilation of combs in liberating queens, which, however, is of little account, as the bees quickly repair the damage, and I should prefer to have a solid cage.

Altamont, N. Y.

[I thought it was conceded that Capt. J. E. Hetherington was the first to make use of springs in supers to bring about compression of the sections on separators; and from what you say it is evident that this assumption is correct. Mr. Danzenbaker freely admits that he saw the super springs at Mr. Mendleson's; but as these were flat he came home and had some made that were round; but at the time, he supposed he was original in the use of round wire springs.

But your detachable springs, made in the form of a bent letter U, it seems, are the best that have yet been devised. There is no doubt at all but it is an advantage to remove the springs entirely, so that the sections can be manipulated easily. Unless some one else claims priority over you, in the use of *round* wire springs, we shall have to concede the honor to you; at all events, it is proper to call them the Wright super spring, for indeed their construction is *right*.

With regard to the wire-cloth introducing-cage, I have long been aware that the idea was very old; for I think I remember seeing a description in the *Bee-keepers' Exchange* to which you refer, for it was at that time I began to take hold of apiculture, and to do my first writing on bees.—Ed.]

A STRANGE MALADY; IS IT A NEW BEE-DISEASE?

BY J. M. HAMBAUGH.

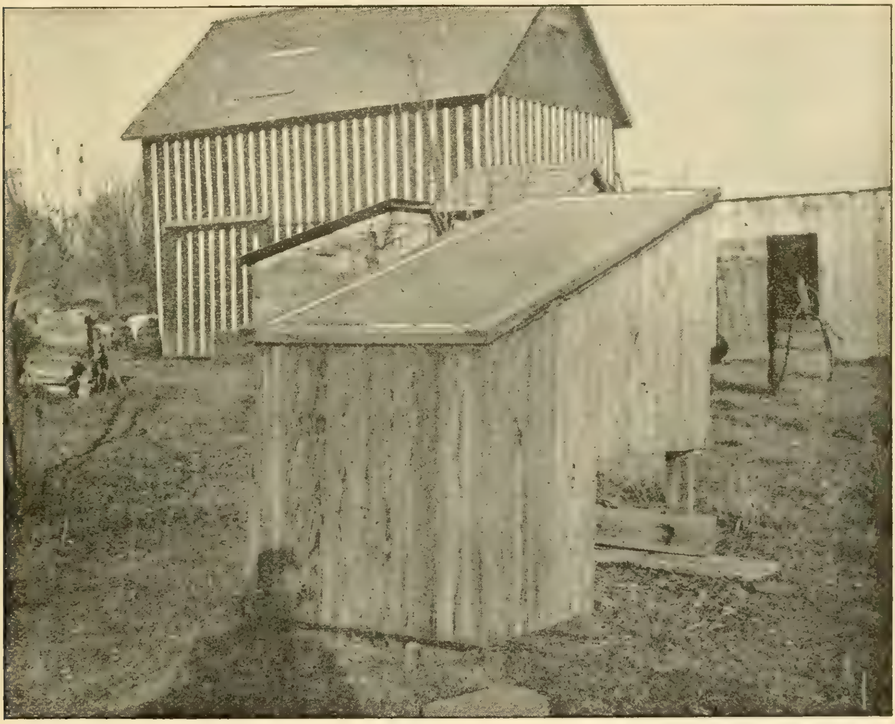
Nearly one year ago a friend invited me to come and inspect a bee-yard which was in bad condition, and assist him in unraveling the mystery as to what ailed his bees. I availed myself of the first opportunity to do so, and found them as he reported, "in bad condition." At that time I had never seen a genuine case of foul brood, but I had read so much about the disease I felt confident I should know it should the symptoms be clearly defined.

By way of preliminary I will say that the previous season, and up to that date, which was June 8, was very unfavorable for bees, the weather being too dry for plant-life development; there was a probability of this with neglect on the part of the bee-keeper for the demoralized condition of his apiary. At that time he had 35 or 40 colonies alive out of 80 or 90 the previous year, and those remaining alive were very badly diseased, both brood and bees. Dead brood in all stages could be found; but it seemed more virulent in the brood in its advanced stages. Sunken sealed cells with small perforations and without perforations were numerous, and scattered all through the brood, and brood just commencing to gnaw out of the cell could be found dead. In very rare instances we could find a coffee-colored ropy cell, but they were so few, and there being no glue-pot smell, we decided it could not be foul brood. We also concluded that it might be demoralization, yet the disease lurked in hives well supplied with honey as well as in those scantily supplied.

To further satisfy ourselves as to the cause of the trouble we sent Prof. Cook a sample of the brood, with a minute description of the conditions as nearly as we could. His reply was, that it was not foul brood, but thought it was probably caused by demoralization, and advised feeding. This we did, and a good rain which came the last of May started new life in the plants, and the bees soon began to gather honey from natural sources. As might be expected, there seemed to be a let-up of the disease, and the conditions improved, from what I could learn from the owner of the bees, who lived nearly 15 miles away, and I had almost forgotten the circumstance. When I chanced to meet Mr. N., a few days ago, he told me the disease had spread throughout his entire yard, and desired me to make one more visit and note developments that we might be enabled to locate the disease, and, if possible, find a remedy; and I will say that, after a thorough investigation, we are still at a loss to understand the malady, and now call upon our big *savants* to enlighten us.

I will say that all the old conditions still remain, only in more virulent forms, and there have been 15 or 20 more colonies added to the death-list.

Another feature we noticed is that, in pulling a larva from the cell, we occasionally found its posterior of a greenish cast, and the old bees do not seem to stay on and try to protect their brood. Some of the old bees also seem bloated while others are the reverse as they tumble about the entrance in the agonies of death. Some have a shivering, staggering ap-



PHILIP LARGE'S SOLAR WAX-EXTRACTOR, HAVING A PROVISION FOR ARTIFICIAL HEAT BENEATH. SEE EDITORIALS.

pearance, while others simply turn over on their backs and die. All this while their hives are well supplied with honey, the present winter and spring being very favorable in this respect. Mr. N. states that his first knowledge of the presence of any disease in the apiary was three years ago. He purchased some bees from a party ten miles distant. Shortly after he had brought them home he discovered one unhealthy colony. They were diarrhetic, and had symptoms of bee-paralysis. The brood also appeared diseased as stated. He says he is not sure, but he believes this colony inoculated the apiary. That this disease is highly infectious there can be but little doubt.

Now, friend Root, let us hear your opinion as well as others. There are no bees within three miles of this apiary. Mr. N. has one five miles distant, and he says they are perfectly healthy, and he knows of no other diseased bees in the vicinity; and I will say that in my experience I have met with nothing like it, and want some light shed upon this important case.

Escondido, Cal.

[The malady or disease, or whatever it is, is evidently not foul brood, neither do the symptoms seem to indicate *black* brood. Taking it all in all, I should consider this a new bee-disease. I would suggest that samples of the affected brood and bees be sent to Dr. Howard, of Fort Worth, Texas; that similar samples also be sent to Thos. Wm. Cowan, now in your State, editor of the *British Bee Journal*. His address is Pacific Grove.

In the mean time your friend should take every precaution that the disease does not spread beyond his own yard; for according to his experience it must be a very infectious and serious disease; and if it should perchance get among the wild bees there is no telling where the disease would spread.—Ed.]

AN IDEAL LOCALITY IN FLORIDA.

Objections to the Thick Top-bars in Hoffman Frames.

BY M. W. SHEPHERD.

Mr. Root:—Bees are doing well in this part of Florida, and to-day we have our hives built up three stories high, all full of honey. We have not yet extracted, having been too busy putting on supers and removing comb honey. The flow first started from ti-ti, followed by black tupelo, black gum, holly, haw, red bay, and yet to come are white tupelo, gall-berry, snowvine, palmetto, and several others of less importance. However, the white tupelo is the main source from which the great flow is obtained. It is usually extracted before it is sealed, and will weigh, when thrown from the comb, 12 lbs. per gallon, and will class as No. 2; and as it *never* granulates it is being taken very readily by the more extensive dealers, and at prices comparing very favorably with that of white clover. Just how many colonies could be profitably kept in one place here has not yet been settled; but we know that 600 have been kept, and I have no doubt 1000 *could* be. The sources from which honey is obtained are almost unlimited. Of course, a poor season for gathering the nectar comes once in a while; but the nectar is there all the same. We have been keeping bees for the past 30 years, and our experience has been gained in Ohio, California, Colorado, back to Ohio, and, later, in Florida; and when we say that this section of Florida is ahead of any other place we have ever seen, we say it understandingly, knowing what goes to make a locality in which a bee-keeper will be successful.

It is not every place where the greatest yields are produced that always bring in the most money to the producer of the honey. Alderman & Roberts have kept 3000 colonies within a radius of a few miles, and have grown old in the business. There are many bees kept in box hives, and we have a few bee-men who say flowers produce no honey, but that it is honey-dew that falls on the bloom. They don't tell us why the dew never hits the leaves of the plant, but only the bloom. Perhaps the "king-bee" doesn't have it done that way. All bees have to be set up on trestles about two feet high, as the ground often gets overflowed with water; and sometimes two feet is not high enough, and hives, bees, and all start for some other place via the river and gulf.

Concerning the merits of the thick-top-bar frames to prevent burr-combs, we will say that on some colonies it does prevent, and on others there could be no more burrs, braces, and bridges built if the top-bar were but ¼ inch thick. The Hoffman frame is no good down here. In fact, we want no self-spacing frame. We are told that the Hoffman frames can be picked up in pairs; and what of it if they can? How often do you want to pick them up in pairs? And what do you want to pick them up that way for? We fail to see any weight of argument in the idea. When we manipulate a hive we want to know what is on both sides of each frame, so we have to pick them up one at a time, and we don't want to have to pry each one off the rest. No doubt in many places self-spacing is all right, but not here.

Marchant, Fla., Apr. 17.

[Look here, friend Shepherd; you had better be cautious about telling how good a locality you have in your vicinity. It may be you will have others flocking to your field to "divide the spoils." It is interesting to know, however, that the locality is so good that it would support 1000 colonies in one place or 3000 within a radius of a few miles.

Referring to thick top-bars, I am well aware they are not absolutely proof against burr-combs, and that some colonies will build them in spite of them. Having traveled all over the United States, and inspected various apiaries, I am very sure you are wrong in thinking that thick bars are no better than those ¼ inch thick; but with a majority of the colonies I have seen with thick top-bars, burr-combs were built very sparingly — so few, indeed, we may say they practically do away with the nuisance. Of course, if there is some particular colony that seems to disregard the thick bars, that would be an exception to the rule, and would really cut no figure.

As to the Hoffman ends not being suitable for any hot climate, that point we have practically conceded for several years, and yet there are some who will have them in the sunny South. In Cuba most bee-keepers there insist on having them, although we have recommended unspaced or metal-spaced frames. —Ed.]

WHY NECTAR DOES NOT SECRETE FROM THE FLOWERS.

Do Moonlight Nights have Any Thing to Do with the Matter?

BY A. J. WRIGHT.

This question is raised on page 649, 1899, by Mrs. L. Harrison. I think the editor also asks the question somewhere.

The leaves of all trees and plants are the stomachs and lungs of the plants themselves, and in a sense are the parents of every blossom. The sap flows from the roots to the leaf-bud, and the leaf is formed, and in this leaf-stomach the sap is digested, and a change takes place (the delicate process can be observed with the microscope), and is then carried to the blossom-bud; and as the supply is kept up the bud unfolds into the perfect blossom. No surplus nectar is deposited up to this time, it being all consumed in the nourishment of the blossom until its full development, and, in fact, is not sweet at all. But when the blossom is perfected this juice is deposited at its base, and a chemical change takes place at night, transforming this juice rapidly into nectar, to be used up in various ways during the day—by the bees, evaporation, etc.

Now, I don't plant my vegetables in the moon, but in the ground; and I find that plants generally grow much faster during light nights than dark. I also find it is a fact that blossoms that come to maturity at the beginning of moonlight nights secrete large quantities of nectar, while others secrete little or none. Just why this is so, or what particular action this subdued light has, I am unable to say; but if you have any doubt on this subject, just carefully make some observations. I believe you have a grove of basswoods. Now, if these trees come into full bloom just at the commencement of moonlight nights, and the sky is clear during the whole time that the trees are in bloom, you will have a honey-flow from basswood; and just in proportion to the amount of moonlight will be the honey-flow.

My observations along this line confirm the views here given. I do not believe a particle of nectar is deposited in the daytime, but it is, as I have stated, deposited at the base of the blossom, and is carried off by various agencies during the day; and in many plants having but a small reservoir and few nectaries, it is exhausted early in the day, and no more is deposited until night comes. A very familiar instance of this is found in buckwheat—bees seldom working on it after midday.

Bradford, N. Y.

[On receipt of the above it was submitted to our good friend Prof. Cook, who replies as follows:]

VEGETABLE PHYSIOLOGY; NECTAR SECRETION, AND UNDER WHAT CONDITIONS; HOW PLANTS BREATHE AND GROW.

Dear Mr. Editor:—In response to yours of Feb. 28, let me say that nature is so complex that we can not afford to be dogmatic. We often think we are sure of a thing, and suddenly awake to the fact that it was all a mistake. We are rapidly getting at the truth in nature by the slow process of accurate observation. We often draw conclusions too quickly. We are sick. We take a little medicine, get well, and for ever dose with and recommend said medicine. This often leads to great mistakes. Patent medicines are a terrible fraud upon the public, but in just this way are perpetuated from year to year, often aided by persons of whom we should expect better things. I fear your correspondent may have generalized too hastily. It takes more than one swallow to make a summer. To take up the points in the article *seriatim:*

The leaves are not in any sense a stomach, as I understand it. They may be called lungs, for they do take in the carbon dioxide, and, with other elements of food, form elaborated sap, or the nourishing material of the plant. The writer speaks of the leaves digesting food. Plants never digest food except in a few cases where insects are supposed to be digested and absorbed by the plant. The writer also speaks of the deposit of nectar from the sap. I do not understand this to be quite accurate. At the base of the flower are special cells or glands which take elements from the sap and form the nectar. We all know that the sap of a plant at the time of the blossom and the nectar in the flower are quite different materials. Again, it is quite a new thought that moonlight is necessary for the secretion of this nectar. I am sure that I have noticed many times very rapid nectar secretion when there was no moon at all. I would not care to say that moonlight might not have a slight influence, but that it is material I greatly question. There are many plants, like the evening primrose, that secrete nectar only late in the day. These certainly do not depend upon moonlight for this power. I think there is no question but that the nectar is secreted to attract insects. The power has been developed in relation to the valuable work of insects in cross-pollinating the flowers. The nectar then will appear when it is needed to attract just those insects that visit the flowers and carry the pollen. Some flowers like buckwheat secrete almost wholly in the early part of the day, though even this is not always true. I hope all bee-keepers will observe this point, and I believe they will find that the matter of full moon has very little to do with nectar secretion. Maximum fruitfulness depends upon fullest cross-pollination. Such an important function could ill afford to wait for the full moon to do its valuable work. Such a generalization as this ought never to be made until a person has observed over and over. Of course, full moon and other conditions favorable to nectar secretion may for several successive seasons be coincident. Your correspondent says, "I do not believe a particle of nectar is deposited in the day time, but is, as I have stated, deposited at the base of the blossom, and is carried off by various agencies during the day; and in many plants having but a small reservoir and few nectaries is exhausted early in the day, and no more is deposited until night comes." My observation has shown quite the reverse of this to be generally true. I have often seen even buckwheat yielding freely of nectar in the afternoon. Your correspondent speaks as though the nectar is secreted for the formation of the fruit and seed germ. I did not suppose this was at all true. It is secreted only to attract the insects. True, we have failure of the crop to fruit when nectar is not secreted. In this case the failure comes from lack of cross-pollination. What your correspondent says in regard to the nectar being secreted and reserved for the development of the seeds I suppose was entirely contrary to the real truth in the matter. I do not think that the seed germ is nourished at all by the nectar.

Dear Mr. Editor, this matter is of sufficient importance to warrant a few words regarding vegetable physiology. We know that plants need no digestion, for their food is wholly gaseous or in solution; and digestion is wholly for the purpose of changing food into a condition whereby it can be absorbed. The food of plants comes wholly from the earth or else from the atmosphere. From the earth come the water and the mineral elements, the most important of which are nitrogen in combined form, potash, and phosphoric acid. Lime and some other elements are also necessary, and are usually in our soils in sufficient quantities. We have to add the four elements, water, nitrogen, potash, and phosphoric acid unless they are already in the soil in sufficient quantities. The plant also gets carbon dioxide from the air, which is taken in through the stomata (the breathing-mouths) mostly on the under side of the leaves. It is generally thought that the leaves take in much water from the air. This is probably not true. On the other hand, an amount of water surprisingly large is constantly passing *off* from the leaves. A damp foggy morning revives the plant in times of drouth, as it lessens the amount of evaporation. In plants as in all animals, all the work is done in the cells, by the protoplasm, or substance which makes up the entire cell except the walls. This protoplasm consists of proteids, substances like the white of an egg, which are always present where work is done, either in plant or animal. These cells have the power to take suitable material into their substance whenever it is present as a gas or liquid. Thus the cells are constantly taking water, and the elements mentioned above, through the minute microscopic root hairs, modifying these and passing them on through the outer cells of the sap wood to all parts of the plant, even to the very topmost leaves. The leaves also take in carbon dioxide from the air, which, with the crude sap from below, forms the material from which they produce the elaborated sap. In the leaf-cells, also in the green layer of the bark, there is, as one component of the protoplasm, the green matter, or chlorophyll. This has the power to form, from the carbon dioxide and water, the sugar of the sap, which, as we all know, is quite soluble. It is possible that these leaf-cells may also have the power of forming this sugar from the proteids of their own substance. We know that the liver-cells of the animal, while they form glycogen, or liver starch, much more rapidly from carbo-hydrates as sugar and starch, can also form it wholly from proteids. We know, also, that the plant cell and the animal cell are astonishingly alike in their function and in the products which they produce, and the methods of their work. The sugar in this elaborated sap is borne along through the cells, as already described, and carried to places of deposit, and transformed and stored as insoluble starch. It is also carried to the cells, and transformed into cellulose, which forms the walls of the cells and all woody tissue. This same elaborated sap is carried to the flowers, and the glands at their base secrete from it elements which attract the bee and other insects. The path of this sap is in the cambium layer, which is made up of the inner bark and very outermost part of the sap wood. The cells of the plant, like all tissue, either animal or vegetable, are constantly taking elements from the sap and building themselves up. They are also constantly wearing out by work just as the cells of our own body are being torn down by their own efforts. Thus the plant, like the animal, must have food or it starves. We lay a board on the grass. We soon find the grass blades devoid of green, and we know that the pallor means ill health. The chlorophyll has been used up by work; and as it can be produced only in sunlight from the carbon dioxide and water, the plants pale and die. The same is true of all cells, if any of the necessary food is withheld. The water of the plant, like the oxygen which we get through our lungs, is so immediately important that, without it, the plant soon withers and dies. We see, then, how necessary it is that our plants have sufficient water. Our soils, too, are often deficient in the three necessary mineral elements already mentioned, and thus the provident farmer sees to it that these elements, if not already sufficiently abundent in the soil, are generously supplied.

There is one other element of all soils that must be in quite large proportion for soils to be productive. I refer to the decaying organic matter known as humus. There are two ways of supplying this substance—either by use of stable manure or by plowing under green crops. By the latter method, we may also, if we use leguminous plants, furnish the combined nitrogen, which is the most expensive of the three mineral elements used in soil fertilization. Indeed, nitrogen costs about double what we have to pay for either potash or phosphoric acid. Thus we understand why green manuring with leguminous plants is so immensely beneficial It always pays well to plow under a large amount of clover, peas, or lupins. (PROF.) A. J. COOK.

Claremont, Cal., Mar. 6.

HOW TO CURE A BAD CASE OF ROBBING.

Prevention Better than Cure; Entrance-closers; a Practical Article.

BY S. T. PETTIT.

Several parties have written me for directions how to stop robbing and how to prevent it. These are important questions to the beginner, and the answers may also be helpful to some others. It is better all round to answer through the papers. It is a burden to reply in a private way.

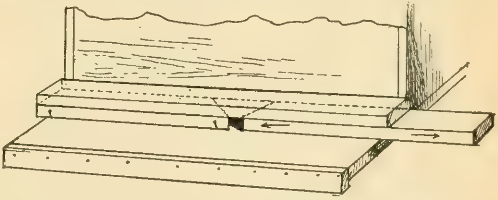
There are various ways of stopping robbing. The condition of the hive being robbed should always be considered. In any case the first thing to be done is to close the hive so nearly that a single bee can with difficulty squeeze through, then treat the robbers the same way. There may be several hives taking a hand in the fracas. If so, look them up and punish them also. When the bees have quit flying toward night, open all up and let the robbers all go home; but watch, or in a few minutes they may go to robbing.

Again, at nightfall put the hive being robbed in a dark cellar, and leave them there for two days. In the mean time set an empty hive in its place. The hive in the cellar should be replaced on the stand in the evening when all is quiet, and place on entrance-blocks such as are described below. If the hive being robbed is a strong one, leave the entrance 3 or 4 in. wide, and cover the entrance with a small armful of hay or straw, and sprinkle liberally and often with cold water, and take it also to the dark cellar for two days. But to prevent robbing is better, and generally easier, than to break it up after it once gets started.

Less robbing will occur if the hives face to the south or west, or anywhere between these points, for the simple reason that the prevailing winds from these quarters will favor the guards in several ways; but the west winds are too strong for best results when the hives face in that direction, so I prefer facing them to the south. Then in the evening of the first day out of the cellar give each hive whose bottom-board is at all loaded with dead bees, or is soiled, a clean, sweet, *warm* floor. To warm it, it should be kept for an hour or more in a warm room. The change should be carefully and quickly made. Let one lift the hive straight up, and another remove one floor and adjust the other; then adjust the entrance-block. Take a walk around next morning, and see how bright and thankful the little creatures look. Their home floor is so sweet and clean! and their courage will be strong enough to defend it. A dirty hive is more likely to be robbed than a clean one.

The entrance and entrace-blocks are factors that demand our careful consideration in this undertaking. The entrance should be about ⅜ inch high, and no higher. To-day I send you a sample of what I consider the best entrance-blocks that I have tried. I do not say that they will in all cases prevent robbing, but they will materially lessen the nuisance.

If any one has much black blood in his yard I believe it will pay him to try these—that is, provided he has not something as good or better. I have a better in the shape of an addition to these blocks for very weak or queenless colonies, but there is not room for a description of it here. To make the blocks, cut a piece of lath an inch longer than the entrance. Cut this in two in the middle, then cut the corners back a little so as to form a V next to the hive when placed in position. Now cut another piece one inch shorter than the first. Next, nail this on top of one of the first pieces. Have the outer ends even when nailing. Now place all in position, and the top piece will cover the V space next to the hive. Close the entrance, and draw a mark across the loose piece at the end of the piece above it, by means of which you can tell just how far you open the entrance when standing behind the hive.



As a rule, bees should have an entrance big enough to satisfy them. A generous entrance encourages them to defend their honey. With it they are more comfortable, and drier and warmer than with one that is too small. How can bees warm and dry themselves in a hive filled with a polluted atmosphere that can not escape? You might as well expect a Jersey to yield lots of good milk from poor hay and sawdust.

Aylmer West, Ont., Can.

[I believe you are entirely orthodox, friend Pettit, on the matter of robbing; but, as you say, preventive means should always be used where possible. A bad case of robbing is demoralizing to the whole apiary. After the bees have once gotten a taste of stolen sweets they are ever on the alert for more. It does not take very long to train bees to follow the apiarist about for hours at a time. I am sorry to say that we have had ours trained so they would follow the smoker; whole clouds of them, in fact, would follow it, for they seemed to know that, as soon as the smoker was picked up, it would be used over a hive, giving them a chance to get at the colony pell-mell. Our apiary is now so managed that there is never a case of robbing; and when the bees get to smelling around a little too much, work over the hives is suspended for the time being, or at least transferred to another portion of the yard.—ED.]

SHOP TALKS
BY UNCLE LISHA

THE RETURN OF SPRING; BREEDING FROM SELECTED STOCK.

The cold winds that had blown from the north for several days had died away. The sun rose clear, and the sky was cloudless. A cock robin from a tree top prophesied a warm day, in boastful song. By nine o'clock the snow that remained was fast becoming liquid, and hurrying away to the great ocean by roadside and rill, as if the welfare of the world depended on its getting there in the least possible time. It was the 5th of April. The bees, too, were rousing themselves from their long winter slumbers, and one hive after another sent forth its scouts to see if spring had indeed come; and soon there was a general rush, and the air filled with that delightful hum that makes a bee-keeper's heart beat quicker and the blood in his veins tingle to his finger-tips. The bees were having a "fly." Of course, I was on hand to see if every thing went right, observe how strong they were, and notice if any had failed to be aroused by the warm spring air.

"Ah ha! How have they wintered?" came from the roadside—a voice that I recognized as Deacon Strong's.

"Pretty well, considering," I replied; "not nearly as well, however, as a year ago. I have noticed that bees usually winter well after a good season. As 1898 was one of our best years, during the spring of 1899 bees were the strongest I ever knew them; but as the summer of 1899 was the poorest for the third of a century our bees went into winter quite reduced in numbers. We can not expect them to come out very strong. There will doubtless be more loss this spring than usual."

"Bees making honey now like smoke, I reckon," said Dan Savage, as he went by driving a dirty pig, and heard the humming of the bees.

"Yes, making it from the last snowdrifts of the season," I replied.

"Have you selected your queen to rear queens from?" inquired Timothy Fasset, who had joined us.

"Well, no—not fully," said I. "There are a good many things to be taken into consideration. There is hive 19 that gave me last year more honey than any other hive in the yard; but I shall not use her for queen-rearing. It is a dark hybrid or low grade, and does best when we have dark honey, as last year. Had white honey been as abundant as usual there are others I am sure that would have surpassed this one; and as our crop is usually white honey it will be necessary for me to secure a strain of bees that work best on the clovers and basswood. There is hive 66. That is one of my old stock, and nearly or quite pure Italian. I have been thinking seriously of using her for queen-rearing in this yard. You see most of my queens in this yard were reared from a queen I bought two years ago, and, of course, nearly all the drones will be like her. The queens I reared from her were all mated with drones from my old stock. Now, if I rear queens this year from one of the best of my old stock I shall get another cross with the drones of the queens reared last year from the purchased queen. For my out-yards I shall either use a queen reared from my purchased queen or perhaps buy a queen if I can find one that is desirable. I believe there is a good deal in crossing stock. Mr. McClure, in Illinois, has been making some very interesting experiments in crossing different varieties or breeds of corn. In crossing some fifteen different varieties he found the crossed seed to be much more productive than either kind without crossing—at least that was the rule; and crossed seed, when planted, averaged sixteen per cent more corn than the uncrossed seed. This probably comes largely from increased vigor of the plants."

"That's cur'us," said Fasset, "that every thing in this world must be kind o' jumbled up like—that is, every thing after its kind, the birds and beasts, and all the plants, in order to be strong and vigorous."

"It shows," said I, "the abhorrence of nature and nature's God to the marriage of near relations. Still, in our efforts for improvement we must not forget the great value of selection. Very little is said on this subject in our text-books on bees, yet I believe there is no more important subject in the whole round of bee-keeping, or one that requires better judgment or nicer discrimination, than the selection of a suitable queen to rear queens from, if we would attain the best results.

"Messrs. Rabbethge & Giesecke, the famous producers of sugar-beet seed, state that in 1889–'90 they tested 2,782,300 roots, from which they selected only 3043 for seed-growing purposes, or about one in 900. How many bee-keepers, do you suppose, would be willing to examine even one hundred colonies of bees that the best one might be used to rear their young queens from? Those who have not given the subject a little attention have but little idea how much care and thought have been required to bring the various plants and animals under domestication to their present state of perfection. The English wild gooseberry, for instance, weighs one-fourth ounce; yet in 1784 it had been so much improved that berries were exhibited, and carried off the prizes, that weighed half an ounce. They have now been so improved by careful selection of seedlings and cultivation that specimens have long since weighed nearly or quite two ounces, or eight times the wild berries.

"Take the sea-island cotton, known the world over as the finest cotton grown The planters had first to change it from a biennial to an annual by selecting the earliest-maturing plants for seed. Then they have increased the quantity of fiber to twice what it was in proportion to its seed, and at the same time have greatly improved its quality, so that now the best grades sell at from fifty to sixty cents per pound. But to secure these results the greatest care is required in raising the best possible strains of seed. When a field of this cotton is ripening it is examined, and all the most promising plants pulled and taken to one side, and these again are gone over more in detail, and a few of the best selected, which are again examined, and the lint and seed of each weighed, and the vigor of the plant, number of balls, etc., carefully noted down before a final selection is made, when the seed of the choicest plant is saved to plant in a plot by itself for comparison with other strains, and so on. Indeed, the system of breeding seed is quite complicated.

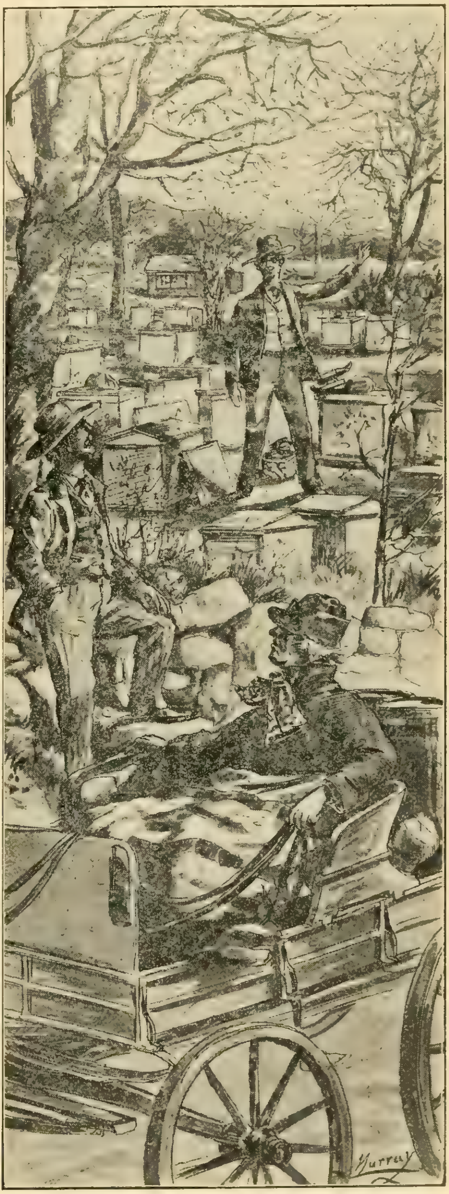
"In Germany, where the potato is used for quite a variety of purposes, it is often valued in proportion to the amount of starch it contains, and is sometimes sold, not by the bushel, but by the number of pounds of starch a given quantity contains. I understand they have improved varieties containing twice as much starch as others, and I see no reason why starch can not be increased in a potato as well as sugar in a beet-root."

"There goes a bee in at that hive, with a load of pollen—the first I have seen this year," said Deacon Strong.

"That's so," said Fasset. "Got it off them alders down on the brook. I guess that means bis; but say, Uncle Lisha, that talk of yours is cur'us and pretty interesting; but why don't you tell more about improving animals and bees?"

"Well," I replied, "the same laws run through all plant and animal life nearly the same, and just as great care has to be taken to improve animals as plants. In Saxony, where they have the finest-wooled sheep in the world, the greatest possible care is taken in the selection of breeding stock, even placing young animals on a table every three or four months during their development, and noting down every thing that would help them decide the best animals for improving their flocks. But if you want an illustration nearer home, take that of the Experiment Station of New York. In 1874, or about that time, it established a herd of cows for dairy experiments. It bought just every-day-grade cows, such as the farmers had to sell—grade Jerseys and Holsteins. In 1874 this herd averaged just 3000 lbs. of milk per cow; yet in 1898, or twenty-five years later, the products of milk had increased two and a half times, or to 7575 lbs. of milk per cow. And this has been brought about, not by buying choice cows, but by careful breeding and selection, selecting the best heifers from year to year, and disposing of the poorest. How many bee-keepers can make as good a show? The average run of bees is doubtless as good for the production of honey as the cows that the New York experiment station started with were for dairy purposes. That bees are quite as susceptible to improvement as cows, I think no one who has given the subject much thought can doubt. Indeed, in the average yards of bees there is more difference between the best and the poorest colonies than between the best and poorest cows in average dairies. I noticed in Bulletin No. 169, from which I obtained the above facts, that their cows are all hornless. They propose to get milk instead of horns, which are no more useful in a dairy than propolis is in a yard of bees."

"But bees are different from cows," said my friend Fasset. "You see, in raising dairy cows they can use such males as they want, while with bees we have to trust to chance."



"ARE HAVING A GOOD FLY."

"That is true; but I believe the chances favor the bees. You see we may never know just the value of any sire for improving a herd until he is tested, which may require several years; while with bees, if we discover a choice queen we can in a single season give to every hive in a yard a young queen from her. It is true these may mate with other drones; but we know that the following season all the drones will be of exactly the same blood, or nearly so, as our best queen, when we may secure another choice queen and get another cross where we are sure both drones and queens are the best attainable."

"Hello!" shouted Bill Carr, from the roadside. "Say, deacon, what will you sell me your horse Prince for?"

"One hundred and twenty-five dollars," he replied. "I paid that for him, and I consider him worth it still."

After bantering some time he offered the deacon one hundred dollars; and when the deacon refused he said he had always heard it was harder to deal with church-members than other people, and now he knew it was a fact. I noticed the deacon's face flushed, and his eyes flashed fire; but he didn't say any thing, nevertheless.

CONVERSATIONS WITH DOOLITTLE

NATURAL SWARMING VS. ARTIFICIAL INCREASE; STRAIGHT COMBS, ETC.

"Good morning. Is this Mr. Doolittle?"

"Yes, that is what they call me. But what shall I call you?"

"My name is G. A. Patten, and I come over from another town this morning to have a little talk with you about increase, comb building, etc., as it will soon be swarming time with the bees. Which do you prefer—natural swarming or artificial increase?"

"For the rank and file in bee-keeping I prefer natural swarming, as the bees can divide themselves to a greater perfection than it is generally done by the majority of those who practice artificial increase. Then, natural swarms seem to work with more energy and vigor than do those made artificially, even when they are made by the most efficient apiarist."

"But with natural swarming will not many swarms leave and go away to the woods or elsewhere?"

"Not if we keep the wings of the queen clipped; and there are very few apiarists of the present day, who work for comb honey, who do not practice clipping their queens."

"How do you care for swarms having a queen whose wings are clipped?"

"I hive the swarms by letting them return, previously moving the old colony to a new location and setting the new hive containing the full number of frames in its place, laying the wire-cloth cage containing the queen down in front of the entrance of the new hive. As soon as the swarming bees miss their queen they return, supposedly to their old hive of brood, but really to the hive we have provided; and, finding their queen, they commence to run in, the same as does a swarm hived from a limb. After half or two-thirds have run in, the queen is liberated, when she runs in with the rest. No other plan of hiving swarms equals this for ease."

"But such a swarm, hived in this way, builds comb the same as any, does it not?"

"Yes. But with all swarms I open the hive on the second day after hiving, when I find that the bees have started comb-building in about five frames. These five frames I place together at one side of the hive, and a division-board is placed next to them so as to confine the bees to these frames. This throws the full force of bees on these five frames, and they will soon fill them with straight worker comb, as a general rule."

"I am very glad you told me this, for I did not have the means to purchase foundation to fill my frames full this year. But won't the bees be crowded in so small a space as the five frames allow?"

"If there are more bees than can work to advantage on these five frames, the surplus arrangement, or as much of it as is required, is placed over them, this last being a great help about securing comb having the worker size of cells."

"But will not the bees build crooked combs?"

"If you furnish each frame with a starter of comb foundation half an inch wide, and work on the above plan, not one frame in 500 will contain aught but a straight comb; for if you get the first five built straight you will have no trouble in getting the rest so, as they can build them in no other way, if placed between two of those already built."

"How about drone comb being built, Mr. Doolittle?"

"There is little danger in having much if any drone comb built in the first five frames, as hinted at before; and should drone comb be likely to be built in those put in later on, it will pay you or anybody else to fill these last with foundation; but I think it pays well to use only guides in the first five. If you can have every comb a straight one, and all of the worker size of cells, such a colony will be a profitable one, or a 'lucky swarm,' as our fathers and grandfathers used to term them. If you attend to this comb-building the first season, you will have all *profitable* swarms. See?"

"But if a man has only a few colonies, will it pay to thus fuss with them?"

"No man or woman contemplating keeping bees, even when having no more than two or three colonies, should consider a colony in proper working order until each comb is a straight worker comb. There is no need of having hives half full of drone comb, and so crooked that they can not be handled. Do things in the right time and in a proper manner, and your bees will more than pay you for all of the time spent on them, even though you have but few."

"But your hives are better adapted to such comb-building than are others."

"I do not claim that the hive I use is the best, by any means; but the method of getting comb built is the correct one. Allow me to illustrate: Suppose a large swarm comes out when basswood is in bloom, and you hive them without paying any further attention to them, as is usually done; they will build comb very rapidly, filling their hive in eight or ten days, as I have often known them to do, and their combs will be quite apt to be crooked, and at least one-third of the drone size of cell, used the first year mainly for store comb. Such comb is good for nothing for raising worker bees the next season, and is an actual damage, as the drones reared therein will consume a great part of what the workers will gather. Such colonies will be unprofitable ones, either for raising bees or storing honey, just so long as the combs are allowed to remain in that condition."

"Your shutting bees on only a part of the frames contained in the hive is something new to me. Do you do this with any but new swarms?"

"Yes. Both new swarms and weak colonies in the spring should have only as few combs as they can cover and be a little crowded, especially those swarms or colonies where combs are being built, for in this way the combs which are begun are rapidly carried forward, rather than starting more to go slowly and be finished off with drone comb. If the bees are likely to crowd out of the hive on account of too little room, put on a part of the sections, and this will be an additional security against the building of drone comb. If any man expects to realize a large income from his bees, and never look after their condition, simply hiving the swarms and putting on the section boxes, he will find himself greatly mistaken."

"I did not suppose there was so much involved in bee-keeping to be successful."

"But you look after your horses and cows very carefully, and why not the bees? Bee-keeping pays only when our pets are properly cared for, and with this, as with all else, success can be achieved only by untiring energy. But here comes friend Jones! Good-morning, Bro. Jones. What are you studying on this morning?"

"I have been reading what you said on p. 216 of GLEANINGS regarding how you treated all colonies which do not have an amount of brood equal to 2½ frames full. Now, what I wish to know is what style of frame you alluded to."

"I alluded to the Gallup."

"That was what I thought. But the Gallup frame is not so large as the Langstroth, so your 2½ frames of brood would not amount to more than two where the L. frame was used."

"You are quite right; and if I had a colony of bees (on the date spoken of in what is found on page 216) that had more brood (in four or five frames) than enough to fill completely two L. frames, I should consider such a one good enough to come up to perfection in bees, in time for the honey harvest, without any of the treatment required for weak colonies."

HEADS OF GRAIN FROM DIFFERENT FIELDS

HONEY-TRUSTS; AN EXPERIENCE THAT WAS NOT ALTOGETHER FAVORABLE.

Of late there is considerable talk about honey-exchanges as being the great remedy for our financial troubles. As California is given as a sample of co-operative success, perhaps my experience and observation might be of some interest. Sooner or later we are apt to have a national honey-trust. We are used to getting the favorable side; and now a mild warning from one who has lost a little might have a tendency to keep some one else out of a pinch.

In 1895 some of us concluded to try a new plan of selling honey. The plan adopted was not altogether to my liking; but I went into the combine, as it appeared to be the best thing in sight. We gave our written promise to G. X. Wendling, at that time a lumber merchant and bee-supply dealer of Hanford, Cal., to turn over our honey to him to sell at such price as we should name, honey to be stored at such point in Kings Co. as he should select. It was argued that we should get car lots in the warehouse as soon as possible. In fact, the only thing in writing was the power of attorney over our entire crop. We were to pay a fixed salary to Mr. W. for his services when they should be needed, also for printing, etc.

Of course, there was some expense in storage, insurance, etc. The bulk of the contracting parties avoided that expense when honey was worth four cents by ignoring their agreement and keeping their honey at home. Two, possibly more, stayed with the deal to the end of the season. I estimated my loss on the combine at over $180. We had been in the habit of selling along as we extracted, and would probably have done so that year; but so many wanted to see how it would come out first, that we came out at the little end of the horn—mostly at three cents or less. When last interviewed, Mr. Wendling used language more forcible than elegant in talking of the honor of bee-men as he had found them average.

That convinced me that it is better to try a corporation where each member *must* do as he agrees, if possible.

The next year gave me a chance to join the State Exchange, at Selma, and I would have done so, but feared my extracted honey would not sell well when nearly all the other honey was in sections. It was a sad sight to see much of that fine comb honey, damaged, of course, and begging a cheap market a year later. The Exchange was accused of holding the price above the market.

The California Bee-keepers' Association, A. M. Gilstrap, of Selma, Sec'y, is a new corporation, and reports indicate that it is a benefit to its members already.

W. A. H. GILSTRAP.

Grayson, Cal., April 23.

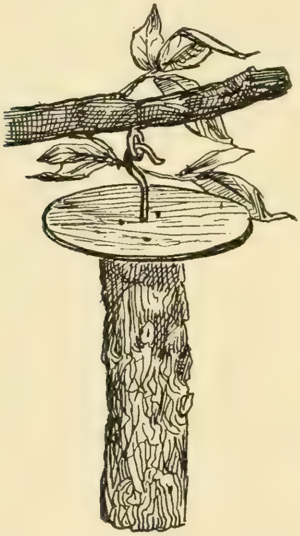
NOT A TRUST, BUT AN EXCHANGE.

I don't like the word "trust" very well, as spoken by Mr. Coggshall on page 259, but a bee-keepers' exchange conducted on principles like the dairymen's exchange for butter and cheese. Let the bee-keepers of a county (or larger section) organize and meet at some central point, say once a month during the honey-flow (this being exchange day) bringing samples of their products with them. The dealers will meet them there, offering to buy, the co-operative principles of the exchange fixing a price to the local dealer, or in carload lots to go to the larger markets. Mr. Brown, in his "Benefits of Co-operation," page 260, gives us some good thoughts on this subject.

Dexter, N. Y. W. R. GLADWYN.

VOIGT'S SWARM-CATCHER.

Blocks made like the inclosed drawing, and suspended under the foliage from small branches, vines, or wires stretched from one point to another as occasion requires, are fine swarm-catchers. Most of mine were secured in that way last season.



The fact that 15 swarms clustered on a post over which a grapevine grew suggested the idea. I shall have 15 or 20 among my hives this spring, and avoid much trouble in taking swarms from the trees and posts. Why they cluster on such places I am unable to say, but they do. WARD VOIGT.

Jackson, Miss., Mar. 19.

BELGIAN HARES; SOY BEANS, ETC.

Though in some quarters I think the Belgian hare business is just now boomed a little too extravagantly, I can indorse, in the main, both Mr. Greiner and yourself. I have been raising those hares some six years. They are easily and cheaply kept, and my stock in that period has varied from a dozen to sixty or more each season. I do not allow them to run at large, but have a warren inclosed with a 4-foot fence, about 2×3 rods in area; and in one end, under a shed, I have a lot of breeding-hutches two tiers high. They furnish a very fine article of meat—white, tender, and as toothsome as chicken. When full grown they reach from 6 to 12 lbs., live weight. Then they have skins as tough as a woodchuck's, nearly, with fine fur—much used of late in tanning for trimmings for ladies' garments, to which the name "Electric Seal" has been given, and it is nice.

The past two seasons for honey-raising have been poor in this immediate vicinity. I have secured only what I call about half an average crop. Just now the prospect looks better for this summer.

Usually we winter from 12 to 21 colonies, in chaff hives; and in seven successive winters we have not lost a colony in that way. The business, however, here, is not very tempting, the bee-pasturage not being over-abuudant.

SOY BEANS.

I find that they will thrive nicely on soils that are quite sandy; are good nitrogen-gatherers, and hence I believe them to be valuable for fertilizing. But the variety that I have tried will be best cut for fodder here—the season is not long enough to ripen them. But they will stand up strong and green through the severest drouths we have here.

Muskegon, Mich. ALBERT BAXTER.

BELGIAN HARES.

I tried to raise them, but the weather was too hot and damp for them here, 60 miles south of Chicago. They would do all right in winter; but as soon as warm weather came their throats swelled, and they coughed and died, and I had great trouble to get them to breed. You have to keep them in a pen with a tight floor, as they will burrow a long way, and bark all the trees they can get at.

Essex, Ill. S. H. GREGSON.

HOW TO FIND QUEENS.

To find the queen in a nucleus is a very easy thing, which I do as follows: First remove the division-board, then lift out and look over the frames as you come to them, setting them on the outside of the hive; or if robbers are bad, set them in a comb-bucket. Many times queens are harder to find in nuclei than in full colonies, very often being found on the side walls or bottom-board.

If I am to find a queen in a full colony, if they are Italians and not too numerous I proceed as with the nuclei. Where robbers are bad I find it a very good plan to discard the tin covers to the comb-buckets, and use a cloth kept wet. Now, if the full colony is very strong, or is black, or the bees poor hybrids, I proceed as follows: First smoke the hive a little. Place a queen-excluder between the top and lower stories; raise the cover, and smoke the majority of the bees down; then look carefully over the combs for the queen. If not found, next smoke or drum the most of the bees into the top story where the queen can be found very quickly by looking over the combs. Very often she is found on the excluder. This plan has never failed to save me much time and labor, especially when dequeening to prevent swarming, or when queens are to be gotten out of box hives, etc. Of course, where colonies are not already two-story, a hive-body can be used the same as if it had been two-story already. In the latter case we know the queen is in the bottom story, and half the labor is saved. H. H. HYDE.

Hutto, Tex., May 19.

ANOTHER METHOD OF FINDING QUEENS.

Mr. Editor:—Noticing your query in issue of May 15, whether any method has been devised for finding queens, I give the plan I have followed for many years where the queens were wary and the bees frightened, and inclined to run about the combs. I remove the hive containing the colony a few feet from the stand, and set an empty hive in its place. Then, beginning with the outside comb covered with bees, I scan it carefully for the queen, changing it to the hive on the stand formerly occupied by the colony. The bees on the combs remaining to be examined are thus not disturbed by the bees that are in a state of agitation by handling, as it is the bees on the returned combs that start the disturbance of a colony. In this way one can go over every frame in the hive, and have no alarm except upon the combs already handled.

I seldom have to look more than once, where this plan is followed, before finding the queen in any colony; whereas one comb taken out and returned in the usual manner starts such a rumpus with the whole colony, especially if it is very populous, that the task is rendered doubly difficult. There may be some better way for finding queens in black and hybrid colonies. If so I should be glad to know of it. I have Italianized many apiaries in the course of my bee-keeping experience, and this method of searching the combs is the best that I have in practice. B. F. AVERILL.

Howardsville, Va., May 20.

[I have tried the methods suggested by Mr. Hyde and Mr. Averill, and in some difficult cases may use any one of them; but ordinarily, if the bees are Italians or hybrids, it is not necessary to go to the trouble of using excluders or removing the hive from its stand. But if we try once and fail on a colony I sometimes use one of the above methods.—ED.]

HONEY FROM FRUIT-BLOOM.

I notice in last edition of A B C that you say apple-blossom honey is all right for breeding purposes, etc., but of very little or no value for table use. Now, I fear the writer of that article has never seen any genuine apple-blossom honey. We often get a good flow here, so we extract some, and this season we have an extra good one, and my colonies have stored at least 35 lbs. each on an average during the past ten days, and I call it a very nice heavy-bodied fine-flavored article.

I send you a small sample by mail, which please show to the writer of the article I refer to, with this letter. We have extracted between 300 and 400 lbs. of this the past week from 20 hives, leaving them with at least 20 lbs. in their combs, and it is all genuine apple-blossom, as they were so short we were feeding before the bloom commenced. I should like your opinion of the sample.

Colrain, Mass., June 4. W. W. CARY.

[The item to which you refer in the A B C was written by A. I. Root for the earlier editions, and it has stood without contradiction until the last year or so. Some one else, I do not now recall his name, wrote that the honey from fruit-bloom was very nice, and he sent us a sample as proof. Referring to the one you have sent, we have all tasted of the honey, and consider it light in color and fine in flavor. Indeed, it emits the same aroma that one smells in an orchard in full bloom. I am inclined to think you are right, and have therefore marked "Fruit-bloom," in our A B C book, for correction.—ED.]

WHY THE HONEY DID NOT CANDY.

Can Dr. Miller tell why my honey didn't candy last winter? Of course, it got a little thicker, as all syrup or honey will in cold weather; but there was no sign of candying, although it was kept in a cold place (below 0) in Mason jars. The honey was light-colored white-clover honey, which generally candies very easily. Some buckwheat honey which was not so well ripened by leaving on the hives candied hard as usual. E. E. EWING.

Rising Sun, Md., May 12.

[Dr. Miller replies:]

Some kinds of honey do not candy, but that doesn't apply in the present case, for this was clover honey. I suspect that the reason your honey did not candy was because it was extra well ripened. I have seen clover honey that passed through a zero temperature throughout a good share of the winter without showing any signs of candying. It was kept in a place that is very hot in summer and very cold in winter—in a loft next the roof. The intense heat of the summer had ripened it so it would not candy.

Will bees swarm without a queen, and, when put into a hive with a frame of unsealed larvæ, raise a queen? I mean by this, will they do it when the parent colony is hopelessly queenless? M. W. SHEPHERD.

Marchant, Fla., Apr. 17.

[Yes, bees in rare cases will sometimes swarm without the queen; but the instances are so very rare that we may almost say they *never* do without one. Why, yes, if the colony is queenless, and hopelessly so, and has a frame of unsealed larvæ, what else could they or would they do, but raise cells? In fact, we have always set it down as a rule that it is never safe to say that a colony is queenless until it has built cells; but we can not, of course, go too far in this, and say that whenever cells are present it indicates the absence of the queen; but if, outside of the swarming season, there are no eggs and no larvæ, and cells are built, and if the bees indicate a sort of nervous uneasiness, it is my rule to say the colony is *surely* queenless.—ED.]

POISONOUS BROOD; SPRAYING OUT OF BLOOM.

Friend Root:—What is the matter with my queens? I tried raising them by the Alley plan, and placed the prepared larvæ in good strong queenless and broodless colonies. Honey was coming in freely, and the bees started fully 100 cells in the various colonies used for that purpose. The cells were drawn out and sealed in due time, and at the proper time for cutting them out I found, without a single exception, the larvæ dead and rotten. Perhaps "rotten" is not the correct word, but anyhow they were a mush in the cell. There seemed to be a total lack of royal jelly in the cells. Now, why was it? is the question. The colonies were queenless, and had been for a length of time sufficient for all the brood to hatch out, and the colonies were very strong, and honey coming in freely, yet not one queen have I got out of the whole shooting-match. If the fault was mine, where was it? and if it was the bees', why was it? All colonies were perfectly healthy, and no disease has ever been in the apiary. We have to raise queens early, for later in the season the mosquito hawks are so bad as to make it impossible to do so. M. W. SHEPHERD.

Marchant, Fla., May 22.

[We have had reports from all over the country as to how brood had suddenly died in certain colonies. Indeed, we have had it die in strong colonies in our own yard. It is something that disappears, or at least always has done so, and the colony is shortly in its normal condition. This trouble I lay to the fact that the bees have gotten the poison that has been used for spraying fruit-trees. While we spray while the trees are *out of bloom*, our Mr. Wardell says he has noticed that after each spraying there are liable to be dead bees as well as occasionally a dead queen, followed by dying or dead brood. When the bees are rearing large quantities of brood, if there is no dew or water handy they are quite apt to lick up the liquid poison on the trees, carry it home, and then the result is poisoned brood. Only recently one of our best queens that had been doing heavy duty was found dead out in front of the hive, and this was just after our trees had been sprayed. The assumption is that the bees of that colony had taken home some of the poisoned liquids, fed them to the queen and to the young brood, because the brood was dead also in the hive. We get reports of this kind every year during spraying time, and I am fast coming to believe that spraying does do some harm, even outside of blooming time.—ED.]

BURNT SUGAR CAUSING DYSENTERY.

Early last fall a grocery was partially burned near me, and a large amount of smoked candy and sugar was left in the ruins, and my bees worked in it for weeks. I was working my bees for increase and not for surplus honey. A neighbor who was running for surplus had his honey ruined by this burnt candy. We both winter in the cellar. He has taken his out, and they appear to be in bad shape. I think mine are badly affected with dysentery. Do you think the burnt candy and sugar are the cause of our poor wintering? A year ago our bees came out of the cellars in fine condition. I suppose if the burnt sugar is responsible for our loss it is too late to do any thing for those that are alive.

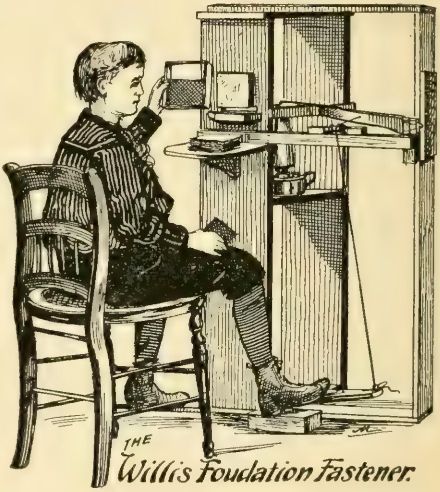
Athol, Mass., Apr. 10. A. M. V. HAGER.

[There is no doubt that the burnt sugar was the cause of your trouble. You will find further particulars on the subject of burnt sugar in "Feeding," in our A B C of Bee Culture. —ED.]

A CHEAP HOME-MADE FOUNDATION FASTENER.

Mr. Root:—Inclosed I send you a photo of the foundation fastener with my ten-year-old boy at the machine. R. D. WILLIS.

Montrose, Colo.



[This is a very simple machine, so simple that almost any one can make one from a glance at the engraving.—ED.]

DOES 1200 INCHES OF COMB MAKE TOO SMALL A BROOD-NEST?

I wish to ask you a few questions. I am using a hive that gives me 1199 inches of comb in the brood-chamber, 11 frames. Do you think it too small? Will it make bees swarm sooner if you feed in the spring? My bees are what I would call fighters, from the woods, or black bees. Do you think them as good as the Italians? E. EVELAND.

Boomeveld, Wis.

[I should say your brood-nest was of fair average capacity. The eight-frame Langstroth hive is perhaps nearer standard than any other on the market, and has 1120 square inches of comb.

For general purposes we do not consider the black bees as good as Italians or crosses between Italians and blacks. The last named are just as good for comb honey, and some prefer them.—ED.]

YELLOW SWEET CLOVER.

I have demonstrated that yellow sweet clover is not an annual, as some writers have claimed, but a biennial, the same as the white variety. I have now a small plot of the yellow in my garden, which is two feet in height, and will soon be in bloom. It blooms from two to three weeks earlier than the white, which is a desirable feature. It grows a finer stalk, but not so tall as the white. My plot of the yellow was all destroyed, except one root, in Feb., 1899, by the hard freeze; but whether it is less hardy than the white I can not say at present. I can say this, however, that it would be a difficult thing in this locality to make the average farmer believe that the white variety ever winter-kills.

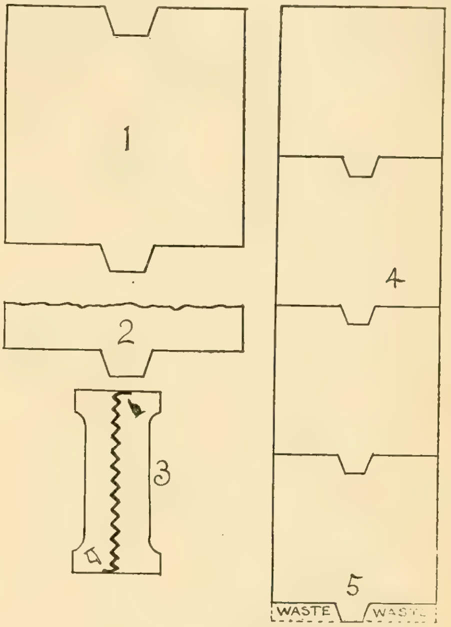
M. M. BALDRIDGE.

St. Charles, Ill., May 23.

SHADE FOR BEES; A NEW WAY OF CUTTING FOUNDATION.

I have been very much interested in the discussion of several topics — shade for bees, and foundation in sections being of particular interest to me, for I think I have solved the problem of both. I want my bees to be where the sun will shine on the hive all day. I paint my hives white, and have the entrance facing east. With the division board on the south side of the brood-chamber, and the follower on the south side in the super, and a shade-board the size of the hive cover on top, I have almost a double-walled hive except on the north side, which never receives the direct rays of the sun. Hives prepared as I have described above will stand 112° of heat, and will never melt down combs of honey or foundation starters, and will give several more pounds of surplus honey per colony than if they were put under some bare tree where they will be in the shade most of the day. A very small tree might do tolerably well; but I should prefer only a shade board on top of my hive. In supers filled with plain sections and fences I nail a six-inch board to one side of the shade-board to protect the south side of the super in the absence of a solid follower.

There seems to be quite a difference in opinion as to how much foundation to put in sections. I have tried inch starters, two inch starters, and full sheets. I find that bees will begin drawing full sheets much quicker than starters. Last season I contrived a new way to cut foundation for full sheets so as to have it fastened to both top and bottom of the section, one sheet of super foundation filling four 4¼×4¼ sections with scarcely any waste. The accompanying drawings* illustrate the knife for cutting, also the manner of cutting and fastening into sections. I fasten with a Parker fastener, placing the upper edge of the foundation under the press first, then turn the section upside down with the other side toward the press, and fasten the small projection in the same manner. There will be an opening left in the foundation at the top of the section; but the bees will fix this up so you will never know that an opening ever existed. I had several pounds of honey, built on foundation as above, on exhibition at four county fairs last fall, and secured three first and one second premiums. The greatest advantage gained by cutting foundation this way is having the combs of honey securely fastened to the bottom of the section. I hauled several supers full of honey a distance of six miles in a lumber-wagon, over frozen roads that were as rough as I ever saw, and not a pound of honey was broken loose from the section, nor a drop of honey leaking from any section. Really, I expected to find it pretty much jammed; but I was agreeably surprised when I took the sections out.



E. F. PITTMAN.

Cantril, Ia., April 23.

[I am not sure but your method is all right; but I do not see how it is you do not have bulged foundation. If you use extra thin I should feel almost sure it would bow out—at least sometimes. However, it costs but very little to try the plan, and I hope our bee-keeping friends will give it a test.—ED.]

What makes my bees kill their drones now, when there are so many flowers, and the bees have plenty of honey? E. P. PRINK.

Plover, Wis.

[If there is a light flow of honey, and it is suddenly cut off, even though there are flowers in bloom the bees will be likely to kill off drones. The very fact that honey-bearing flora are in bloom is no evidence that they are also secreting nectar.—ED.]

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* No. 1 shows a full-sized sheet of foundation ready to fasten into the section. No. 2 shows the blade of the knife for cutting foundation. No. 3 shows a cross-sectional view of foundation after fastening it in the section. No. 4 shows how one sheet of foundation is cut.

EDITORIAL
BY E. R. ROOT

PERHAPS you have not noticed it, but we have been giving eight extra pages during all the spring and early summer, and we shall probably continue doing so for some time.

REFERRING to the Hakes-Heddon honey matter, see page 446, Dr. Mason says I misunderstood him if I got the impression from him that Hutchinson wrote that he was not sure the honey came from us. But Mr. Hakes says that *part* of the Hutchinson honey probably came from two sources and sends letters from Mr. Hutchinson to him, in which the latter says the honey was some he produced himself, and some he bought. But so far as the real issue is concerned it makes no difference whether it came from us or not, as Mr. Hutchinson would not knowingly sell adulterated honey. From all the evidence now in our hands, it is very doubtful if that last sample (that was analyzed and pronounced adulterated) ever came from Hutchinson; for there is no real proof that his honey was in any of the jars that were on the shelf from which the sample was taken.

THE CANKER WORMS ON THE BASSWOODS; OUR BASSWOOD ORCHARD ALMOST A FAILURE FOR HONEY.

THE canker or measuring worm is making rather bad work in our basswood apiary. Thousands of them are at work on the leaves, and nearly the whole orchard of about 3000 trees is infested with the pests. It is somewhat of a question whether we had not better spray the whole orchard, comprising as it does ten acres of land. It might kill the worms, but would it pay?

By the way, that fond dream of A. I. R.'s, of 25 years ago, of a basswood orchard, has never materialized, or never, I should say, come up to his expectations. It probably would have done so if the land had been underdrained in the first place, and the shoots had been cut away from the body of the trees. There are but very few basswood buds to be seen this season, and I am sorry to say I have not seen buds on any basswood-trees in our locality to amount to any thing. I do not, therefore, expect that in Northern Ohio there will be much honey from that source.

Later.—Since the foregoing was written we have had some hard heavy rains, and the canker worms have disappeared almost entirely; but we can easily see the effects of their work in the curled and partially eaten leaves.

HILL'S CELL-CUPS; THE IMPORTANCE OF LARGE ONES.

MR. H. E. HILL, editor of the *American Bee-keeper*, and one of the members of the Southern Bee Company, at Fort Pierce, Indian River, Fla., has sent me some specimens of Doolittle cell-cups which he has made, which are more accurate, and more nearly perfect, than any thing I have ever seen before, and that is saying a good deal, because our friend Pridgen has come very near reaching the acme of perfection. Speaking about size, they are large with large bottoms. Our Mr. Wardell says he thinks that large cups are better than small ones. The cells not only look larger, and are larger, but he thinks the queens themselves that are reared in them, because of the abundance of room which they have enjoyed during their babyhood, so to speak, have thus an opportunity to develop in a way they will not in cells made from smaller cups. Said he, "You will remember that swarming-cells are always large roomy affairs, and that the queens from them are monstrous beauties. I believe Doolittle is right in urging the importance of rearing queens according to nature. Give me the big cups—the big roomy ones."

Later.—Mr. W. H. Pridgen, Creek, N. C., has sent another assorted lot of cell-cups or "goblets," as he calls them, that are fully the equal of those submitted by Mr. Hill. The former says he can make them any size and any shape by the peck. We shall probably offer cell-cups for sale, but in the meantime I would suggest sending direct to Mr. Pridgen and to Mr. Hill, the latter at Indian River, Florida.

THE DEVIL AND THE DEEP SEA; THE GLUCOSE TRUST.

I HAVE heard about being "between the Devil and the deep sea;" but here seems to be a case where the two parties are at war with each other. Possibly these designations of the two contesting factions are a little severe; but the majority of the syrup-makers are as much competitors of the honest honey-producer as the glucose trust itself. Of the former there is a class who are also venders of so-called honey, which they label as "Pure Honey," "Farm Honey," and a score of other innocent nice-looking names. Well, here is a clipping from one of the dailies, and I only hope they may war themselves to death, but this they will never do. But we as bee-keepers can stand back and say, "Sic 'em!"

> CHICAGO, June 2.—Seventeen Chicago syrup-makers and scores of syrup-makers in other cities, representing hundreds of thousands of dollars of invested capital, have seen their business almost destroyed as the result of a war of extermination started against them two months ago by the Glucose Sugar Refining Co., known otherwise as the glucose trust. Within the last sixty days, so the syrup-manufacturers say, the glucose trust has gone into syrup-making, and has put up the price of raw products and reduced the price of syrups to its customers to such a degree that the other syrup-makers are unable to do a satisfactory business.
>
> Affairs of the syrup-makers, however, have reached such a crisis that a meeting of the principal manufacturers of the United States, who are organized into the National Syrup Association, has been called in Chicago early in July to devise some method of fighting the trust and resuming satisfactory business. In the meantime twelve out of the seventeen Chicago syrup-factories have practically closed their doors, and the remainder have given up syrup-making and gone into other lines of business.

APIS DORSATA ON THE WAY TO AMERICA.

ONE of the American soldiers with whom we have been having some correspondence, detailed for duty at the Philippines, has made arrangements for the sending of one or more *Apis dorsata* queens to us. To save a long journey across the continent, and to give the queens every opportunity, we have arranged to have them sent to W. A. Pryal, of San Francisco. I wrote to him, asking if he could receive the shipment, take care of the queens, give them a rest, and allow the bees a flight for a few days or weeks until they could recover from their long journey, at the end of which time to send the queens to us. In reply he writes as follows:

> *Mr. Root:* — Your note of a fortnight ago was duly received, and I have been daily expecting the announcement of those bees from the islands. They will receive suitable attention when they arrive. I am thinking of having them installed in the grounds of the mayor of the city. His beautiful place is a block up the street from our office. 'Twill be a good place in more than one sense in which to introduce them to the best portion of the United States. While he might extend to them the freedom of the city, an exception must be made against the queens. W. A. PRYAL.

In a few weeks' time we may expect that there will be a shipment of the giant bees to the United States. They may all be dead, because we do not know how well such bees can stand confinement or long journeys. But the effort is worth the trial. Mr. Pryal is an enthusiastic bee-keeper, and will, of course, give the bees every possible attention.

I hope we may have the full text of the mayor's address of welcome to our shores. Hip, hip! Hold on! We will not throw up our hats yet, for may be our chickens will not hatch, and our gilded air-castles may fall ingloriously to the ground.

THE HONEY SEASON FOR 1900; PROSPECTS NOT FLATTERING.

ALTHOUGH it is a little early to make any predictions as to the honey-flow, owing to the lateness of the season, yet present indications would seem to show that the supply of white-clover honey will be rather limited this year. Walter S. Pouder, of Indianapolis, who is in close touch with a large area of country, writes, "There is scarcely any white clover in Indiana, Southern Ohio, and Illinois. The outlook is discouraging, and business is growing lighter." Owing to a lack of rains, H. G. Acklin, of St. Paul, Minn., wrote us a rather discouraging letter a week or so ago. Since then there have been good rains, but I fear they are too late to do much good unless with basswoods.

The season in California will be better than was at first expected; and especially is this true for the northern and central portions of the State. The rains finally came in the southern part, but too late for the amount of good they might have done.

Black brood has got such a start in certain portions of New York that many of the bee-keepers are discouraged; and even if there is a honey-flow I fear there will be but few bees to gather it. F. A. Salisbury, of Syracuse, N. Y., reports that prospects are not flattering.

In our vicinity I have seen almost no white clover out, although there are a good many patches of alsike; but these patches are so limited I fear they will not yield much honey. Although this is the 13th of June, our bees at the home yard are getting but very little honey, and the same is true of the out-yard about two miles north of us; but at a yard owned by Mr. Boyden, secretary of the Root Co., some honey has been gathered, but he says his bees are not doing much now.

While all of this looks very discouraging, yet it must not be forgotten that the season is unusually late, and there is yet a chance for a fair honey-flow, because the greater portion of the country is being visited with frequent and warm rains. These will have a tendency to stimulate clover, resulting possibly in a slow but continuous nectar supply for a considerable length of time. It should also be remembered that it is a little early yet for most places for clover.

By the way orders have been coming in from Colorado, from the L. A. Watkins Co., Denver, it would seem that indications, at least for that State, are exceptionally good. As the bee-keepers there do not have to depend on rains, but on irrigation, in all probability they will have another heavy honey-flow; and I would say to the bee-keepers of that State, do not be in a hurry to sell your honey; for if there should be little or no honey in the East, you of Colorado will have things largely your own way. With your splendid organization and fine honey, it is evident that the honey-buyers will have to take the honey at *your* price.

On receipt of this issue I should like to have our subscribers from every portion of the country write us about 10 or 20 words, giving the prospects for a honey-flow and whether the indications are good; or, if the season is past, whether any honey was secured or not. I should like, in our next issue, to give an exact report for the whole country.

Don't, *don't* write long letters, as it takes time to summarize the contents of hundreds of letters.

These reports are very important, and bee-keepers will confer a great favor on the industry and on the trade by telling of the nectar supply. If honey will be scarce, those who do get a crop will be able to gauge prices accordingly. In any case, don't sell too low.

PHILIP LARGE'S SOLAR WAX-EXTRACTOR; BELGIAN HARES; COLORADO NOTES RESUMED.

OWING to the crowd of other matter I have been obliged to discontinue my Colorado notes for the time being, and I will now pick them up where I left off.

Mr. Rauchfuss and I made a stop for a day or two at Longmont, a locality at the foot of the towering Rockies in which are kept thousands of colonies of bees. At this place reside J. E. Lyon, Philip Large, and J. B. Adams. All of them are prominent bee-keepers; and while there may be others I did not happen to meet them. We stopped for half an hour or so at Mr. Large's apiary. While here I could not help noting the effect of the Colorado climate on the pine lumber—the checking and the warping—especially the hive-covers. But the thing that attracted my attention was Mr. Large's solar wax-extractor, something of his own devising and make. Of this I took a picture, the half-tone reproduction of which appears in another column.

Its manner of construction will be apparent. At the back end there is a cupboard door communicating with an air-tight compartment. In this, if I remember correctly, Mr. Large had a big lamp which was placed under the slanting pan of the extractor. The heat from this lamp, combined with the strong sunlight from above, causes every particle of wax to be melted. Mr. Large was greatly pleased with the working of his extractor, and well he might be. The neat trim appearance of the machine shows him to be a mechanic. Indeed, in the same yard I found his edge tools—planes, etc., on a bench outdoors where he leaves them right along. This would look shiftless in Ohio, but every thing is so dry in Colorado — no dew and no rain, or comparatively none — that leaving tools out thus is quite the orthodox thing providing there are no thieves about.

It was at Mr. Large's also that I saw those mammoth Belgian hares. I had seen them at other places, but thought but very little about them at the time ; but knowing what I now do about them I would have plied Mr. L. with one hundred and one questions. Those he had were mammoth in size ; in fact, they seemed to be almost as large as a shepherd dog. They were confined in little pens, and all they had to do was to eat and grow.

It was at this same place that I first saw real Colorado irrigation. I had seen the ditches, but at the time I was visiting the State no water was running to speak of. Mr. Large started the water to going in the ditches in his garden, for my special pleasure ; and then I saw for the first time how utterly impossible it would be for an ordinary windmill to furnish enough water to irrigate even a small plot of ground. Mr. Large used, I should say, a thousand barrels of water to irrigate just a small garden-plot once. Why, a little eight-foot windmill would not be in it.

In our next issue I will tell something about our drive to the foothills near Longmont, and of the sandstorm which we went through ; of the way J. E. Lyon and the other Coloradoans winter their bees.

FOUL BROOD ON THE INCREASE IN THE UNITED STATES ; A CAUTION ABOUT SENDING SAMPLES OF BROOD THROUGH THE MAIL.

I DO not like to pose as an alarmist, but it is evident that foul brood is on the increase throughout the United States. A few years ago we heard of it only occasionally here and there in isolated places ; but now we get from three to five letters a week with samples of brood, the writers asking whether it is the dreaded disease or what it is. I have run across one or two samples of black brood, or what I thought to be such. I have seen a number of cases of what I suspected was poisoned brood ; but, worse than all, a large number of samples of late were real foul brood.

By the way, I wish to caution our friends about mailing suspected samples of brood to us. We do not object to having them sent us, but *comb must be wrapped in absorbing cotton and then packed* in stout wooden or tin boxes. Just the other day a sample of brood came to our office, packed in a loose flimsy pasteboard box. The honey had leaked through, and the package was badly daubed when it reached my desk. It did not take me long to get it down near the boiler furnace, but, happily, it was only pickled brood.

While we have no foul brood in Medina we hope all the friends will be kind enough to see that each specimen of brood is carefully wrapped in absorbing cotton, and then encased in tin or wood — not pasteboard. Common spice or cinnamon tin boxes, oblong, with square corners, answer very nicely ; but even then the brood should be wrapped in absorbing cotton or in paraffined or waxed paper.

We are very glad to help our subscribers, and think perhaps it would be well for any one who has a doubt as to whether he has a contagious disease to send a sample of the brood to us, for I think I can tell all cases of foul brood, and diagnose pretty closely on black and pickled brood.

Just as I was dictating these words a bee came in and hovered over the fresh ink with which these shorthand tracks are written. I wonder if it smelled what we are talking about. Well, now, suppose that this sample of brood in a leaky package that allowed the honey to run through had been placed on *my* desk while I was absent, and suppose it had been foul brood. Do you think for a moment that that bee would have gone away without taking a good big drink of the virus that had been imported through the mails ?

If foul brood is on the increase in the country (and I am seriously afraid it is) the sending of nuclei ought to be discontinued. In New York State especially, colonies ought not to be shipped from one locality to another.

DR. MILLER'S GOBACKS ; HOW TO MAKE THE WHOLE CROP OF COMB HONEY NO. 1 ; HIS OUT-YARD AND HIVE-MOVING RACK.

WHILE I was visiting Dr. C. C. Miller at his home, he and his sister Emma quite incidentally made reference to their "goback" colonies and "goback sections." Said I, with eyes staring wide open, "I should like to know what new-fangled thing you are referring to."

"Gobacks," said the doctor ; "haven't I ever told about them in the journal ?"

"You have not," I said—"at least I do not remember seeing any reference to them."

It seems that, in taking off their comb honey, they remove the supers when most of the sections are completed. These are taken to the house, and the filled sections are set to one side to be scraped and cased ; but the unfinished ones "go back" into the same or another super. There may be one or a dozen or perhaps a hundred or so of supers with partly filled sections, and these are all designated as "gobacks." They are either placed on top of other supers that are being built out from foundation, or upon colonies that seem to show a special aptitude for finishing up gobacks.

In looking over Dr. Miller's hive-record book I found there were certain colonies that had produced so many filled sections and finished up so many gobacks. These gobacks are all placed on the hives *before the honey-flow ceases;* so when the season is over, Dr. Miller has nothing but No. 1 filled sections without any unfinished ones, or practically none, to be extracted, to be sold for less money, or to be filled out after the honey-flow by feeding back—a wasteful, laborious, and disagreeable job, because all has to be done during the robbing season.

Of course, there is nothing particularly new about placing unfinished sections on the hives, to be filled out; but, if I mistake not, the general practice is to place such sections on the colonies *after* the honey-flow.

Another interesting fact to me was that some colonies are much better for finishing gobacks than for filling sections from the foundation — that is to say, when work is apparently *started* or almost finished, those colonies show a special aptitude for *completing* work, but they are not as much inclined to *start* on raw foundation as some other colonies in the yard.

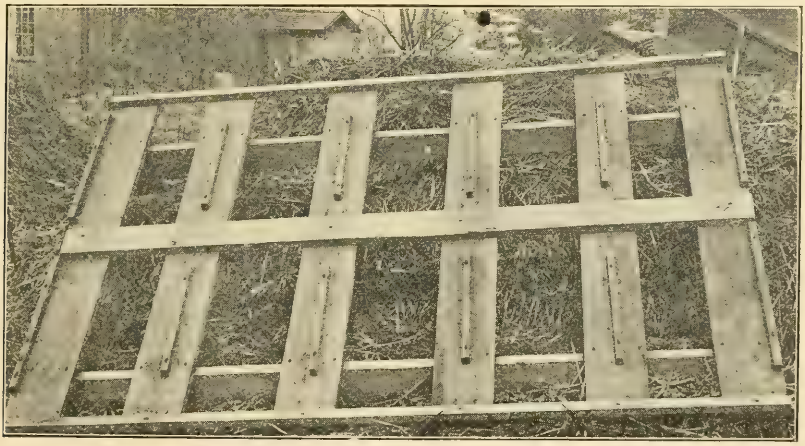
It seems that the Miller family have a way of finding out the peculiarities of each colony, and those peculiarities are recorded in the record-book; and if the queen is still in the hive next year, that queen and her bees are devoted to a special kind of work—it may be to filling out gobocks, to running for extracted honey, if the honey is travel-stained, water-soaked, or discolored, or to producing comb honey from foundation at the start. The colony that is good both at producing honey and finishing gobacks is given light work, and its queen is used for a breeder.

Queer, is it not? that a prolific writer like Dr. Miller should not have told us about his gobacks; and yet I suspect this matter is like a good many of the other hundred and one tricks of the trade that he knows, and supposes we all know. The word "goback" is suggestive, and worth coining, and you may be sure it will be used in the forthcoming edition of our A B C book.

Emma also gave me an interesting fact; and that, was when one has sections that from any cause have tiny drops of honey oozing from the cappings, to put them in a super, place the super on a hive for a few hours, when the sections will all be licked up clean and nice. It appears that the Millerites so manage that their crop shall be *practically all of it* No. 1 honey; and yet I suspect that over half of the producers of comb honey have anywhere from 10 to 25 per cent of it No. 2. A word to the wise is sufficient.

DR. MILLER'S OUT-YARD BEES.

After we had talked about gobacks I took my kodak and placed it on a step-ladder, or rather, I should say, a plant-stand, and took two time views of Dr. Miller's out-yard bees just as he had taken them from the cellar, and before they were moved out to their permanent location for the summer. In another column may be seen this apiary together with the home yard in the distance under the apple-trees. The hives on their temporay location are set out promiscuously, and then when they are moved to their "summer residence" they are placed in regular groups of two.



MILLER'S SECTIONAL MOVING-RACK.

While I was rambling over Dr. Miller's premises I blundered on to his hive-moving rack. Although something similar is shown in the A B C book he has made some improvements, and I therefore took a snap shot at this, or, rather, a half of the whole rack, for it is made in halves for convenience in handling. The halves are placed together on an ordinary wagon, end to end. By the arrangement of cleats one can readily see how the hives are placed. It is a very simple and cheaply constructed affair; but, like every thing else that Dr. Miller uses, it is as good as the very best—that is, it answers every requirement.

OUR HOMES,

BY A. I. ROOT.

Thy word is a lamp unto my feet and a light unto my path —Psalm 119:105

The forty-first annual convention of the Ohio Sunday-school Association was held at Akron, June 5—7. I should be glad to tell you of the great crowd we had there, and something about what the great speakers said. I should like, also, to tell you of the uplift it gives one to meet the good men and women from all churches and of all religious faiths. As I heard them speak and give testimony during the varied exercises, and tell about their churches, Sunday-schools, teachers' meetings, etc., in their own counties, it gave me a thrill of happy surprises. I really did not know there were so many, not only good men and women, but so many exceedingly bright and intelligent men and women, here in our own State of Ohio. I do not know but I have been dwelling too much of late on the *wickedness* of mankind. If so it was a good lesson to me to contemplate for a little time the *goodness* and *nobility* of mankind. One of the great speakers said many people would have it that the world is becoming wickeder, and he declared that they were right. It is true that the world *is* becoming wickeder. He said there were also very good people who declare the world is becoming *better*. Satan is making great strides with our new inventions; but Christianity is also making as great or greater strides, and therefore it is possible for both statements to be true. The wicked are growing wickeder, and the good people are growing better; and the office of this Ohio Sunday-school Association is to pull the children *out* of wickedness, and plant and nurture them among the good. May God be praised for the small army of men, women, and children that are doing the work.

Some years ago I heard a good deal said about a lady who had wonderful ability in teaching the primary department. My impression is she was quite young when she commenced the work. So much was said in her praise that I expected great things when I first heard her. To tell the truth, I was somewhat disappointed. It seemed to me that she was too young to have charge or to be promoted, as she had been, to the position of handling so many of the little ones. I do not know but I said to Mrs. Root (of course I would be careful not to say it to anybody else) that this young teacher was a pretty good-looking girl and rather smart, but I was afraid they were making too much of her, and that she would get to be vain of her talents. And, by the way, I do not know but it is one of my infirmities to think the world sometimes makes too much of certain people. I remember a good many times when Ernest and others of the younger ones have thought I expected too much of quite young people; and they have predicted that, if I would just wait, I would see that the world was right and that I was wrong. And this thing has happened. Quite a good many boys and girls have turned out a *great deal* better than I predicted they would, and I was not mean enough to feel bad about it either. I rejoice at such "happy surprises."

Well, Mrs. Bryner was one of my happy surprises. Years after I first heard her, she talked in our own church in some large gathering. After the meeting was over I told her how much I enjoyed her talk, and added I hoped the good people of our State and other States would give her sufficient support to enable her to keep *right on* in that work; and I ventured to ask how she was supported. Somebody said it was by voluntary contributions; and it was my privilege then and there to subscribe $25, to be invested in keeping her before the people. Well, at this present convention Mrs. Bryner gave me another happy surprise. She was talking to a class of fifty or more boys and girls, ranging in age from five to ten years. The great church was so crowded that I could get only a partial glimpse of the speaker from a spot in the gallery. I could not hear all she said, and I am not sure that the text I have chosen is the one she used; but I think it will do very well. She captured every youngster in the lot almost in an instant. She did not capture me *then* and *there*, because she had done it years before. May I digress a little right here?

You know that, during the past few months, I have learned to love the flowers, and it has made my wheelrides much pleasanter during this month of June, because when I catch a glimpse of them around the homes as I ride my wheel, I know their names and know about them. Some object-lesson in the front yard indicates to me the possibilities of certain plants that I had never before suspected. And then I realize that, if I try hard, I may have something like it, and perhaps equal to it, in *my* flower-garden at home. Well, these glimpses give me the pleasant thrills I have told you about—thrills of praise and thanksgiving to God the great Father. Now, the sight of those good people at that convention gave me many such thrills. The good-looking faces and the pleasant smiles of both the men and women made me happy; and I think I shall do nothing wrong if I frankly acknowledge that so many good-looking girls and women—now, mind you, I mean by this girls and women who looked *good*—with their neat and tasty attire thrilled my very soul again and again. I should not care a cent for looks alone if they were not accompanied with intelligence and a love for humanity. When a woman, young or old, uses the power of her good looks and accomplishments in teaching the children the way from earth to heaven, can there be a happier or a more lovely combination? And this prepares me to tell you that Mrs. Bryner is a very handsome woman. I do not think she will feel offended, even if she should read this, for she will know —at least she will when she reads it all—that it is more what she *does* than what she *is* that makes her attractive. Please imagine a bright sprightly woman standing before these expect-ant little ones. First she smiled at them, then put up her hand and shook it at them by way of a salute, and, of course, they saluted back again. Then she shook both hands, something as they shake their handkerchiefs at the Chautauqua salute. The children did the same. Then she asked them to stand up and give her a salute, and said:

"Now wiggle, not only your hands, but your arms, and do it real hard, as I do"

And what a fluttering and giggling there was among those youngsters!

"There," said she, "you have wiggled enough now, so that you can sit still a few minutes without being uneasy."

They all caught on to the point at once, and then she commenced her story.

"Children, a few days ago I saw some men at work in the streets of Chicago, and when it came night, so they were obliged to stop work, they left some great dark-looking holes right in the middle of the street. They had been at work at the gas-pipes and water-pipes, and things of that sort. And there were piles of sand and bricks and mortar, and pieces of iron. Then a man came along with a lot of lanterns, and put a lighted lantern on each side of these dangerous-looking holes. He set the lantern up on a pile of dirt or bricks. Who can tell me why he put the lanterns there?"

A lot of hands went up here, and a variety of answers came.

"To give the people warning."

"To let the people see where the danger was."

"To save them from harm."

After a great number of answers had been given she selected the one most appropriate, and placed it on the board. Then she asked:

"*Who* is to be saved from harm?"

One suggested the horses and buggies. When she asked who else, somebody piped out, "Boys riding bicycles." So she got a variety of answers. Then she had them tell what they knew about light-houses to give warning to ships. I was greatly astonished to know that among that mass of little people she gathered information in regard to light-houses that perhaps many grown-up persons did not know.

"Children, what people is it who carry lanterns all day long?"

Her class looked at one another in an undecided way, and finally some one piped out, "Miners."

"Where do miners carry their lamps?"

There was another pause while they studied the matter a little. Then some boy said, "In front of their caps."

"Will some boy please come up here with a cap and show us just how the miners fix their lamps?"

A boy came up, and the process was explained.

"What are the lamps made of?"

"Tin or other metal."

"How do they fasten the lamp to their caps?"

A juvenile voice replied:

"They have hooks on the lamps that hook into a place in the cap."

I can not take space here to give all the information she received in regard to this matter of shedding light in dark places in order to save human life. Some of the answers were not only unexpected, but exceedingly bright and original. Not only the children, but that whole vast audience, was so entertained that everybody forgot to be tired or to feel uneasy. Before she had dropped the matter of mere mechanical work and suggested a spiritual application, I was wondering in my mind how she would bring it in, and enable these children to grasp great spiritual truths. She did it, however, easily and naturally. While talking she was as busy with hands and tongue as any of the children. She asked if Sunday-schools were any thing like the lamps that give warning in regard to dangerous places. Then she spoke of the way in which the Sunday-school teachers, the superintendent, and all the officers could point out dangerous places. Then she asked what sort of person the superintendent of a Sunday-school ought to be. And those juveniles answered these questions after quite a little trying, with much wisdom and many original suggestions thrown in. Altogether they answered some questions better, perhaps, than the average minister would do it. Again and again I was startled by the wisdom, judgment, and good sense that she brought out from that little audience. One child would sometimes be "away off" in his answer; but another would right him up. Then a third would add something else; and a little girl, perhaps the smallest in the lot, would cap the climax in a way that "brought down the house."

When she came on the stage she brought some paper boxes of different sizes. Toward the close she picked up a fancy-colored box and commenced untying the string, saying, meanwhile, "Children, would you like to see what I have in these boxes?"

Of course, they were all on tiptoe with expectancy; she took out a very small wax taper and lighted it, then added, "This is a wee little light, not as large as the miner carries on his cap; but in a very dark place it would look much brighter and larger, and might help a good deal. I wonder how many of these little folks will be Sunday-school teachers when they grow up. Oh! there is a lot of you. Well, that little girl with the blue dress may come and stand by me and hold this little candle."

You can readily imagine how pleased the child was to stand by her bright animated teacher holding aloft her little beacon light.

"I wonder if there is a boy here who would like to be a *superintendent* of a Sunday-school some day when he is big. Superintendents ought to be very good men, should they not? They ought to be pure and clean men, so that they may let their light shine, and lead others away from danger. That boy with the pink waist thinks he would like to be a superintendent. He may come and hold this other candle. Now we need a lot of officers in the Sunday-school. We want a good bright boy for secretary. Let him come up and hold a candle too. Then if our Sunday-school room is kept neat and tidy we must have another boy for sexton. He can shed the light of Jesus over his fellow-men just as well as the rest of the officers. Who will be sexton, and take this candle?"

In a little time the stage was filled with little folks bearing their lights.

"Finally," said their bright leader, "Jesus said, 'Go ye, therefore, and teach all nations.' May be some of you little folks here will go out as missionaries to foreign lands. Is there one little boy or girl who would be willing to go away from home and carry the light of the gospel to foreign lands? If so, let him or her come forward."

Some of the little faces looked sober at the thought of deserting home and friends; but they also looked serious and determined, and, as before, the volunteers came forward. After they were done, with an appropriate closing she told them they could blow out their candles and carry them home if they wished.

This may seem dull when put on paper; but Mrs. Bryner has had such large experience in holding children and churches full of people that she has become an expert in her line of work. The love of Christ shines forth, not only from every word but from every act; and no one who knows and sees her can for a moment doubt that her influence over these children will be a power for good as long as they remember that brief lesson and the bright woman who gave it. I suspected at the time she had a power that would influence older ones as well as the juveniles, if she chose to use it; and before the exercises of the day were closed my conjecture was verified.

Our State Association has been for years behind in its finances. It has called again and again on the separate counties to help them out. A good many of the counties respond promptly, and some pay more than their share. But there are others who are away down in Sunday-school work, and do almost nothing at all. Printed cards were scattered around among the audience, telling what each county had done. I was glad that Medina Co. was printed in black type, indicating that we had paid our full assessment; but I was pained to notice that many others had paid almost nothing. Permit me to digress a little.

At the close of one of the largest sessions the chairman called for contributions. He said there were something like 1500 people in the audience, and 10 cents from each one would make $150, but we should probably not get more than $100. Of course, some might not be able to give even the ten cents; but he thought there were others who would give 25, 50, or 75 cents, or even a dollar. I could not get a seat; and, standing where I was, I could see over the audience. Well, when I saw seatful after seatful refusing to give even a *nickel* my heart sank within me. I could not help thinking of a slang expression boys sometimes use--"We do not *have* to;" and I fear that was the trouble.

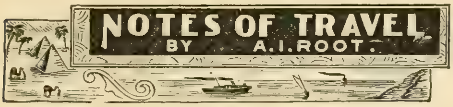
Now, hold on, friends. May be you think I am getting over into the same frame of mind I alluded to in the commencement of my paper. While I prayed for my fellow-men I also prayed that God would give me grace to see things in their true light. And then it seemed revealed to me that these people, all of them, would respond liberally if they were *sufficiently aroused*, or if something could draw out their better feelings. Well, at the close of the last session we were told the debt hanging over the Association amounted to $2500. I was appalled at this piece of information. But the speaker added that, right in the city of Akron, a man had been found so generous as to volunteer $1250, *or half of the whole indebtedness*, if the people of that convention would raise the other half. *And the people did it.* It was, however, a long pull and a strong pull. The sum of $1000 was raised during the day; and, if I mistake not, quite a good deal of it came from the business men of Akron. At ten o'clock on the last day of the convention there remained $250. Half of it was raised without much trouble; and then it seemed as if everybody had got to the bottom of his pocket. I confess I was a little bit surprised when the manager of the matter suggested we should bow our heads and ask the Lord to help. I was surprised again when contributions started promptly at the close of the prayer. Then it seemed as if we absolutely could not get the last $50. At this point Mrs. Bryner came forward, and one other lady to assist her. Mrs. Bryner handled that great audience of business men a good deal as she handled the juveniles. Not a word that she spoke or a motion that she made was in the least bit out of place; but recognizing, as everybody did, that she was heart and soul devoted to the bettering of humanity, and looking after the children of our State, how *could* her pleas be resisted? At the close we sang:

Praise God, from whom all blessings flow,

and then some one closed with a brief and excellent prayer.

And now, dear friends, although I have not had very much to do with this State Sunday-school Association before, may I be pardoned for suggesting right here that, since this debt is paid, we hereafter *pay as we go*, and do not, in the future, spend money, even for Sunday-school work, until we have it?

The Anti-saloon League has had an experience like the above, and I believe their motto now is, "Pay as you go." I do not know just how large a part of this $2500 was paid by the business men of Akron—half of it, as I have told you, and perhaps the larger part of the other half. In the first place, the rest of the people of Ohio ought to be ashamed of themselves. Perhaps they can make it up by doing their part when this convention swings around their way. Secondly, the rest of the State of Ohio should give three cheers for Summit County and the city of Akron. Honor and praise should be given to the progressive business men of this enterprising go-ahead little city. And, finally, may God be praised for the business men who give their time and money to hold up the Sunday-school as a beacon-light to the boys and girls of Ohio so they may not stumble and fall because of the temptations and pitfalls Satan has spread around them.



NOTES OF TRAVEL

BY A. I. ROOT.

I was on hand at the Sunday school convention mentioned elsewhere, just after dinner of the second day. The largest church in Akron was crowded to overflowing, and, in fact, they had overflow meetings some of the time. Now, it is a pretty hard matter for me of late to sit in a crowded audience during more than one sermon or speech of any kind at a time; and as a rule I do not like the sermon or speech to be a very long one. As the day was warm, the windows were swung partly open; but with the great crowd suffering for air it vexed me to think that somebody could not swing *all* the windows open as wide as they *could* be. Another thing, I could not hear the speakers unless they spoke very loud indeed; and many of the women (whom I most wanted to hear) I could scarcely hear at all. I was so far back in the crowd I could get only a glimpse of the speaker's face by dodging first one way and then the other. Finally somebody suggested that the women remove their hats, and then I made a discovery. I could not only *see* the speaker, without any trouble, but I could also *hear*, and I think I heard every word after the hats were taken off. I have thought best to mention this right here, because, even in our own community, there are some who have taken exceptions because our pastor asks the women to remove their hats. Well, I got along for another hour after the hats were off. Then I so longed for the pure air and the open country that I slipped out and was soon flying in the direction of relatives five or six miles east of Akron. Before I had gone far, however, it began to rain. But I pushed on for about four miles, until my Sunday clothes were getting such a wetting I climbed up on a porch to wait till the summer shower was over. I told the good people I just wanted to go over as far as Mr. Wolf's; but they informed me the family were at the convention in Akron. My conscience had been troubling me about deserting the great body of Christian people in the way I had done, so I just turned around and wheeled back to the convention faster than I went away. I have once before mentioned in the Home Papers that this particular family had recently united with the church, and become earnest workers in the Sunday-school, perhaps somewhat on account of my vehement urging. The man who owned the porch remarked, "I suppose you know the Wolf people are all great Sunday-school folks." Yes, they had left their farmwork in the very busiest time of the year to attend the convention, and here was I (after all my *talk*), playing truant. I went back and took my place in the audience, and behaved myself until after ten o'clock that night. The rain cooled the air. My trip of eight miles had got my blood into excellent circulation, and the grand themes that were discoursed gave me, I trust and believe, a new baptism of the Holy Spirit. The good people of Akron furnished free lodging to all who attended; and as the number went into the thousands they had spread the people all over the city. I asked for an assignment over in the suburbs nearest my relatives, and at daybreak I was out on my wheel, this time with a clear conscience.

I found cousin Wolf's folks just getting up. Things in general all over the farm (more especially the corn and potatoes) were just "getting up" in good style, also. Notwithstanding taking a day off, or two days off, if you choose, to attend the convention, I think I never saw things look so nice before as they did on that farm. We discussed potatoes and strawberries; and after a nice breakfast such as none but a wheelrider (who starts off at daylight) can fully appreciate, I started off to Wilbur Fenn's, some five or six miles distant. He was in the cellar operating a new machine of his own invention for taking the sprouts from potatoes. I wanted particularly to see how he had managed in keeping the potatoes from sprouting during the recent exceedingly hot weather. He said he got along all right, and had very little sprouting, until toward the first of June. Then the long stretch of hot days, hot nights, and hot winds, raised the temperature of the cellar, and the potatoes all together started on a boom of sprouting. Shoveling them over did not seem to do them much good, and so he was putting them through the machine. Like myself, he had 200 or 300 bushels yet unsold; but he says he does not worry over such a quantity, even in the middle of June, nowadays, as he used to. People have learned for miles around that, when there are no more *old* potatoes to be had anywhere else, they can always get some at Wilbur Fenn's; and it is much the same way around here. It is now pretty well demonstrated that any piece of vacant ground will do for potatoes if we get at it about the first of July. Last fall we had an early frost, it is true; but this does not happen very often. People have discovered this, as I am saying, and therefore there are more and more people wanting late potatoes to plant. And this is not all. Even when new potatoes sell at the same price for table use as old ones, a good many prefer the old potatoes, especially if they have been properly cared for. Wilbur Fenn says potatoes for table use should be placed directly on the bottom of the cellar—no boxes or bins. Of course, the cellar, or that part of it, should be kept perfectly dark. We had the new Russets for dinner; and either my wheelride or Mrs. Fenn's skill in cooking or Wilbur's plan of keeping them (may be all three together) resulted in getting up the nicest dish of mashed potato, it seems to me, I ever tasted, and that, too, *in June*.

Now then. Somebody who would like the job can make a business of furnishing the people nice potatoes, either to plant or to eat, clear up into June or July. Of course, there should be a nice cellar made specially for keeping potatoes; and such an establishment should be kept up within five or ten miles of every home, city or country. Where one advertises and ships potatoes, some kind of cold storage would be the thing. Of course, we can keep potatoes on the barn floor in good condition to plant, clear up into August, but they are not just the thing to ship. The sprouts would get broken off in handling, and they do not look tidy. By opening our cellar cool nights and keeping it shut warm days, we get along very well till about the first of June. After this there must be some kind of cold storage to keep the potatoes from sprouting and wilting. The friends in the South, where second-crop potatoes are grown, are calling every season for old potatoes through July and August. While seed grown the same season *may* be made to sprout, it is a difficult matter. A seed firm in Richmond, Va., has a cold storage for this very purpose, and they send out a catalog of old potatoes especially for planting either in June or July. Of course, there are seasons when old potatoes get to be very low in June; but this year nice cooking potatoes bring 40 or 50 cts. a bushel pretty readily almost anywhere, even if wilted and sprouted potatoes are somewhat of a drug.

MACHINE FOR REMOVING SPROUTS FROM POTATOES.

I think cousin Fenn will not object if I tell you how it was made. Get a common drygoods box 6 or 8 feet long, about 2 feet wide, and a foot or less deep. Remove the bottom, and in its place put poultry-netting, with mesh small enough so none of the potatoes will fall through. Now balance it across the middle so it will work up and down like a seesaw. Put in half a bushel or more of potatoes, and with the seesaw machine make them roll back and forth from one end of the box to the other. The sprouts will be broken off and dropped into the box beneath. The end of the box furthest from you is made with a sliding gate, so that, by pressing down a lever, you can let the potatoes when done run out of the box at the further end. This machine takes the sprouts all off—that is, when they are long enough to break off readily, and puts the potatoes in one box and the sprouts in another. With some boys to pour in the potatoes and carry them away, the work can be done quite rapidly. The one we use is on the same principle, but it has a cylinder turned with a crank. I gave a picture of it on page 384, GLEANINGS for 1890.

HIGH PRESSURE
GARDENING
BY
A. I. ROOT.

THE EARLIEST STRAWBERRY.

And now it transpires that the berry that is earliest one year is not sure to be first to ripen the next season. I can not tell why this is so; but very likely the soil and method of handling have much to do with it. We have had the Clyde for two or three years, but had about decided it did not possess sufficient merit to add it to our list. But this spring, when taking its chances out in the field with other varieties, it is not only the first to give us ripe berries, but the berries are very large and fine ones. Last year the Rio gave us the best large nice berries, but this year they are away behind the Clyde. One reason for this, however, is, the row of Rios is on the south side of the patch, and right close to it is a heavy stand of wheat. The wheat kept the sun off, and perhaps robbed the berries of moisture and fertility. The Darling, which has been one of our very earliest, was this spring on ground that has been for many years heavily manured with stable manure. This has made the soil so light it did not stand the drouth in May; and of late I have been telling the boys again and again that they must spade or plow deep enough to turn up some yellow clay to be mixed and worked in with the surface soil. A great deal of our ground that has been manured so many years is too light, and certain plants do much better in a rather heavy clay than in a soil containing so much humus.

MULCHING TOMATOES WITH STRAW.

I do not like muddy tomatoes any better than muddy strawberries. But tying up with stakes is more trouble and expense than we can afford — that is, if we have very many of them. I was just thinking of a mulching of straw when I saw the following in the *Ohio Farmer*, from W. J. Green, of our experiment station:

> A straw mulch, put on as soon as the plants get large enough to interfere with cultivation, helps greatly. At the experiment station the crop was doubled in this manner. In ordinary seasons it would pay to buy straw, and use it in this manner at the rate of a ton to the acre. This is not all; the mulch is beneficial to succeeding crops. Coarse manure will answer the purpose also.

Brother Green is all right, although he does not allude to the agency of the straw in keeping the tomatoes *clean*. Now, I believe we can grow tomatoes without any cultivation at all after the ground is once well prepared. Work it up fine and smooth, ready for the crop, then cover your whole plot with straw a foot deep. Make holes down through the straw with your arm where you want your plants, and set the plant down in the ground, and let it grow up through when it gets ready. Of course, you want to stretch a line so as to get your plants evenly spaced. In this case you will have nothing to do with the plantation any more until you go over it to gather the fruit. I have worked this same arrangement with potatoes until I know pretty well I am right about it. This year our potatoes under straw were put in in the usual way, but rather closer together. We worked the ground, and tended them nicely until they were two or three inches high. Then we covered the whole surface with straw from an old stack. I waited a little later than I should have done, because I wanted the ground well soaked with rain before putting on the straw covering. The rain came about the first of June. A good many said I would smother my potatoes and kill them; but in a week they were peeping out through the straw, looking as green and happy as could be. It is on the same piece of ground where I had the straw last year to kill out the dandelions. Only a few straggling dandelions are alive this spring; and after working the ground over it is perfectly clean. If this straw mulching absolutely prevents weeds of any kind from going to seed, our ground can give its "whole time and attention," so to speak, to the crop to be grown. Has anybody ever practiced mulching tomatoes with straw?

We have some beautiful-looking potatoes where we put a double handful of jadoo around each piece of potato when it was planted. They have made about the most rapid growth I ever saw potatoes make anywhere; and so far this season we have not seen a potato-bug to amount to any thing. When our first early potatoes came through, the boys found about a dozen bugs, which were promptly "executed." Since then there have been almost none. We do not mind the Colorado chaps so much; but I am actually afraid of the blister-beetles. We beat them out last season, but only after they had stripped the leaves from a good many of our potatoes, and it cost quite a good deal of money to get rid of them.

SOMETHING ABOUT GERANIUMS.

Mr. Root:—I notice in the April 15th issue of GLEANINGS your praise of the pelargoniums or "Lady Washington geraniums." I wish to tell you of one that I have at present in bloom that has over 100 flowers on now, and about two weeks ago there were over 200 flowers and as many buds at one time. It grows in an 8-inch pot, and stands about 30 inches high from the top of the pot, and nearly 24 inches across, nicely branched; and when at its best it was a perfect mass of blossoms. I traveled 40 miles the first of April to visit a greenhouse and see the flowers, and there was not a plant there that could compare with it for beauty. I also have an orange-tree with its fragrant flowers and little green fruit; also roses that were far nicer than all the other flowers Princess Bonnie, with its beautiful crimson scarlet blossoms, and, oh so fragrant! C. E. KELLOGG.

Spring Bluff, Wis., April 23.

IVY GERANIUM IN CALIFORNIA.

Mr. Root:—Like many others I am much pleased that you have taken up flowers. GLEANINGS has followed us to this far-away land, and I notice what you say of ivy geraniums. You may like to know that here there are many fences completely covered and hidden by them, and they are a mass of blossoms. One color is usually used for one fence. If in a corner, one color goes one way and another the other sometimes. We have found no apiary yet, but bees hum in the pepper-trees. I have been told they spoil the honey in some places, making it smarty. What we called Lovetangle is here used to cover walls, or in great masses in place of grass. It has a purple blossom instead of yellow, as in Wisconsin. Bees are quite thick wherever it is seen. MRS L. W. DENSMORE.

Santa Barbara, Cal., May 26.

INDIA RELIEF FUND.

The following amounts have been received for the starving people of India since our issue for May 1:

Friend	$ 3 00
Geo. R. Moren, Waverly, Wis	10 00
C. Harrman, Durango, Ill	8 00
A. C. Williamson, Friendly, W. Va	5 00
Dr. Nuckols, Banister, Va	50
F. J. Creasy, New Plymouth, Idaho	1 00
Oliver Thorn, St. Hyacinth, Canada	1 00
J. P. Cooper, Pikeville, Tenn	1 00
	$29 50

KIND WORDS FROM OUR CUSTOMERS.

STARVING INDIA, AND SOMETHING ALSO ABOUT STARVING BEES.

You seemed much interested in the Indian famine sufferers two months ago. In the *Christian Herald* of June 6, Mr. Klopsch says it is to be feared that the worst is yet to come when the monsoon floods come. "Having loved his own which were in the world, he loved them unto the end." It were little use to feed the famishing for a while and leave them in the day of calamity to perish. As well feed a hive of bees, and then in the spring allow them to starve for want of five or six pounds after feeding them fifteen or twenty in the fall, as *I* did, with many of mine last fall, and now many of the strong ones are dead—starved in April! What a sin and a shame! 150 good strong colonies dead! Like the Israelites in the desert, after being saved out of Egypt, and in a fair way to enter Canaan, they had not faith to make the final move; so I had not faith to venture to buy five or six barrels of sugar, so as to make sure they had plenty

Well, their return to the desert life gave them lots of time for study, meditation, recreation, and improvement, having "angel's food" from heaven to eat, and no garments to make, though with me I believe I would rather place a super on a strong colony than to clean up a dead one, and watch for moths all summer with frequent regrets; but such is humanity.

Rev. Jas. Smith, a missionary on furlough from Ahmednagar (a school-mate of mine), in a letter says, "The Canada Methodists have sent less than $20,000; the Presbyterians, $100,000; *Christian Herald*, $300,000 and a cargo of grain. This is magnificent; but the cargo of grain is but a drop in the bucket. A hundred cargoes are arriving daily; 1,000,000 bushels of grain a day are being sent into the famine districts. Pain and starvation are nothing when they work out spiritual gain, and these latter gains around Ahmednagar are enormous. We are seeing more accomplished in a few months than we hoped to see done in fifty years."

Little Britain, June 9. R. F. WHITESIDE.

A VERY KIND CRITICISM, AND SOME KIND WORDS BESIDES.

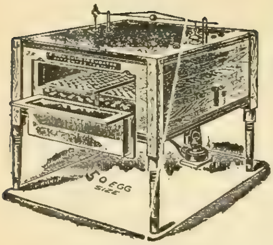
Dear Brother:—Permit me to call your attention to a slight inaccuracy of statement in your last Home Paper, May 1. Three times, I believe, in that paper you mention Mark and Luke as in the company of the apostles. "Matthew, Mark, and Luke, were for some reason left behind;" "Matthew, Mark, and Luke thought they were," p. 359; "Matthew, Mark, and Luke, did not half try to cast out that demon," p. 361. I know that, as soon as I call your attention to it, you will remember that Mark and Luke were not only *not* in the number of the twelve, but were, in all likelihood not converted until long after Christ had ascended to glory. All that we know of their personal history is in connection with the labors of the apostle Paul—Col 4:10, 14; Acts 15:37, etc. This, however, does not alter the excellent and helpful teaching of your paper. Because the paper is otherwise so good and true, I like to see it free from all inaccuracies.

Let me take this occasion also to express my special appreciation of another of the recent Home Papers—the one in which you give your impression of David Harum. I have put that aside, and marked it to use as occasion serves. The world, the flesh, and the devil can not ask for more ingenious advocacy of their views and purposes than is found in David Harum.

I might remark on many others of the Home Papers which I have found helpful to me personally, and useful to me in my work as a minister. My prayer is that you may be long spared, and still "bring forth fruit in old age." Yours in the work of our dear Master. R. A. LAPSLEY.

Greenville, Va., May 15.

[Dear brother, you are right, and I humbly beg pardon for my carelessness and thoughtlessness. While dictating that Home Paper I had before me Robinson's Harmony of the Gospels, and I read all together side by side the different accounts of the miracle as given by Matthew, Mark, and Luke. Without thinking, I somehow got it into my mind that when Matthew used the pronoun *we* in asking why they did not succeed, the *we* meant the three who tell the story, each one in his own way. I knew, of course, that Luke was not one of the twelve; but I hope you will forgive me when I tell you that I did not know, until you called my attention to it, that Mark also is not enumerated among the chosen twelve.]



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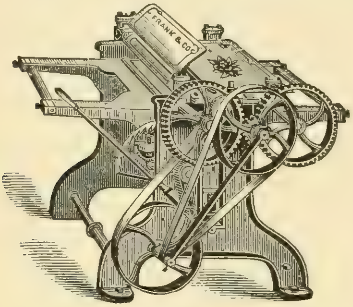

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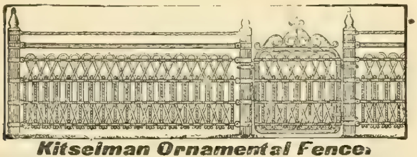

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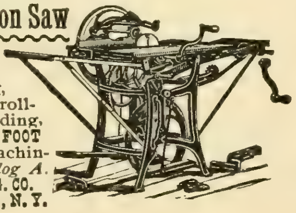

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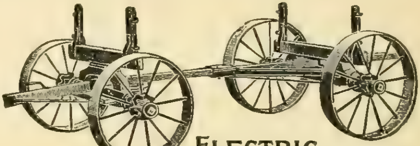

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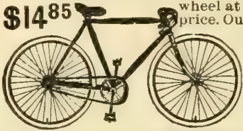

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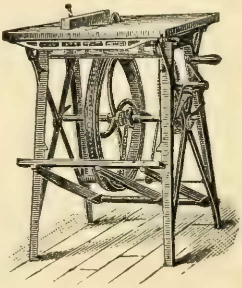

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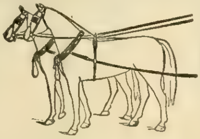

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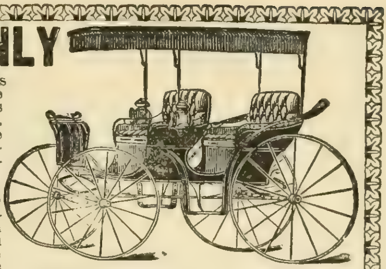

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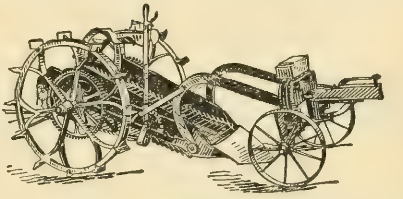

It will be time very soon to dig your potatoes; and, in fact, in some places it is time already. If you want something that will put the potatoes *all* on top of the ground, and do it, too, with one good strong team, you probably can not do any better than to use the Dowden potato-digger, made by the Dowden Mfg. Co., Prairie City, Iowa. Drop them a postal card, and they will cheerfully give you all the particulars, answering every question anybody will probably ask in regard to the machine.

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KENTUCKY, TENNESSEE, ALABAMA, MISSISSIPPI, FLORIDA,
WHERE

Farmers, Fruit-growers,
Stock-raisers, Manufacturers,
Investors, Speculators,
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will find the greatest chances in the United States to make "big money" by reason of the abundance and cheapness of

Land and Farms,
Timber and Stone,
Iron and Coal,
Labor--Everything!

Free sites, financial assistance, and freedom from taxation, for the manufacturer.

Land and farms at $1.00 per acre and upwards, and 500,000 acres in West Florida that can be taken gratis under U. S. homestead laws.

Stockraising in the Gulf Coast District will make enormous profits.

Half-fare excursions the first and third Tuesdays of each month.

Let us know what you want, and we will tell you how to get it—but don't delay, as the country is filling up rapidly.

Printed matter, maps, and all information free.

Address **R. J. WEMYSS,**
Gen'l Immigration and Industrial Ag't,
LOUISVILLE, KY.

In writing, mention Gleanings.

Our Bees are Busy

now carrying loads and loads of pollen and sweets from the flowers to raise the thousands of new bees for the coming honey crops. We are busy with the orders for Hives, Sections, Foundation, Comb to enable the bees to spread themselves over a surface for rapid work.

Many implements and fixtures to help the people to handle the bees conveniently and with profit.

Drop us a postal card and we will send a catalog of the best and latest Bee hives, etc.; contains also instructions for successful managing of bees for profit.

: : ROOT'S : :

ABC OF BEE CULTURE

If interested in buying groceries, ask for our wholesale list, and it will also be mailed.

We have sold several carloads of Root's hives and supplies, and can make you the best prices for quantity ordered besides a saving of freight in points adjacent to Evansville.

ADDRESS

Vickery Bros., Evansville, Ind.

WHOLESALE GROCERS.

DITTMER'S FOUNDATION!

AT WHOLESALE AND RETAIL.

This foundation is made by an absolutely non-dipping process, thereby producing a perfectly clear and pliable foundation that retains the odor and color of beeswax, and is free from dirt. Working wax into foundation for cash, a specialty. Beeswax wanted. A full line of supplies at the very lowest prices, and in any quantity. Best quality and prompt shipment. Send for large illustrated catalog.

GUS DITTMER, : : : AUGUSTA, WIS.

Root's Goods in Kansas.

Carl F. Buck, Augusta, Butler County, Kansas.

D. COOLEY,

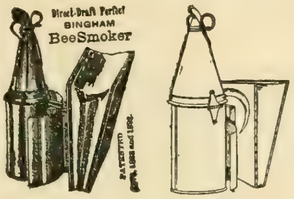
Dealer in **BEE-KEEPERS' SUPPLIES,**
KENDALL, MICH.
Root's Goods at Root's Prices. Catalog free.

POULTRY BOOK FREE, 64 pages, illustrated, with 3 months' trial subscription to our paper, 10 cents. **Inland Poultry Journal, Indianapolis, Ind.**

SUPERIOR HONEY QUEENS. Bred from our superior strain of Italian Queens. Untested, each, 70c; ½ doz., $3.75; tested, $1.00; ½ doz., $5.50.
LEININGER BROS., Fort Jennings, O.

GINSENG WE ARE HEADQUARTERS FOR **Seed & Plants**

All the latest instructions about it; its value; what used for and how to grow it. This valuable information **FREE** for a stamp.
AMERICAN GINSENG GARDENS, ROSE HILL, New York.



BINGHAM SMOKER.

DEAR SIR:—Inclosed find $1.75. Please send one brass Smoke engine. I have one already. It is the best smoker I ever used. Truly yours,
HENRY SCHMIDT, Hutto, Tex.

MADE TO ORDER.

Bingham Brass Smokers

Made of sheet brass, which does not rust or burn out; should last a lifetime. You need one, but they cost 25 cts. more than tin of the same size. The little open cut shows our brass hinge put on the three larger sizes. No wonder Bingham's 4-inch smoke-engine goes without puffing, and does not drop inky drops. The perforated steel fire-grate has 381 holes to air the fuel and support the fire.

Heavy tin smoke engine, 4-inch stove, per mail, $1.50; 3½-inch, $1.10; 3-inch, $1.00; 2½-inch, 90c; 2-inch, 65c. Bingham smokers are the originals, and have all the improvements, and have been the standard of excellence for 22 years. Only three larger ones brass.

T. F. Bingham, : : Farwell, Mich.

1881 1900

PAGE & LYON MFG. CO.

We manufacture a full line of the latest BEE-SUPPLIES.

Our motto is, "Perfect Goods and Prompt Shipment."

Send for our new free illustrated catalog.

PAGE & LYON MFG. CO., New London, Wisconsin.

Marshfield Manufacturing Company.

Our specialty is making SECTIONS, and they are the best in the market. Wisconsin basswood is the right kind for them. We have a full line of **BEE-SUPPLIES.** Write for free illustrated catalog and price list.

Marshfield Mfg. Co., Marshfield, Wis.

NOW READY!

64-page Catalog of Every Thing Bee-keepers Need.

Illustrated and fully described. Especially valuable to beginners for the information it contains Send your address on a postal and get it NOW. Established 1884.

J. M. Jenkins, Wetumpka, Alabama.

Marquette, on Lake Superior,

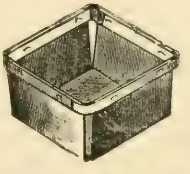
is one of the most charming summer resorts reached via the Chicago, Milwaukee & St. Paul Railway.

Its healthful location, beautiful scenery, good hotels, and complete immunity from hay fever, make a summer outing at Marquette, Mich., very attractive from the standpoint of health, rest, and comfort.

For a copy of "The Lake Superior Country," containing a description of Marquette and the copper country, address, with four (4) cents in stamps to pay postage, Geo. H. Heafford, General Passenger Agent, Chicago, Ill.

QUEENS. GOLDEN ITALIANS. Unexcelled for business, beauty, and gentleness. Bred from the best of stock obtainable. Untested, 60c each; 6, $3 25; 12, $6 00. Tested, $1.00 ea. Extra fine breeding-queens, $2.00 each. E. A. SEELEY, Bloomer, Ark.

Fruit Packages of All Kinds.



— ALSO —

BEE-KEEPERS' SUPPLIES. . .

Order your supplies now before the busy season catches you. Price list free. Address

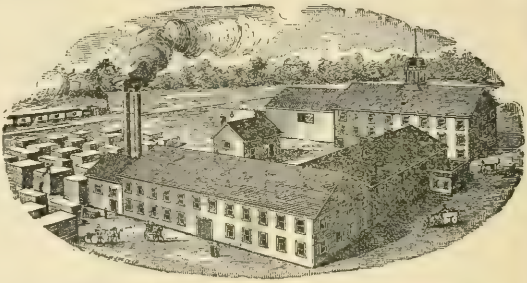
Berlin Fruit-box Co., Berlin Heights, Erie Co., O.

FOR SALE. 2000 60-lb. screw-cap honey-cans at 25 and 30 cents per pair.
J. A. BUCHANAN & SONS, Holliday's Cove, W. Va.

BEE-SUPPLIES!

We have the best-equipped factory in the West. Capacity, one carload a day; and carry the largest stock and greatest variety of every thing needed in the apiary, assuring BEST goods at the LOWEST prices, and prompt shipment. We want every bee-keeper to have our FREE ILLUSTRATED CATALOG, and read description of Alternating Hives, Ferguson Supers, etc. *Write at once for a catalog.*

We also manufacture TANKS of either wood or galvanized steel, all sizes, any form, and for all purposes. Price list free.



KRETCHMER MFG. CO., Red Oak, Iowa.

$10.00 REWARD

To the party who sends me the most money for bees and queens between April 1 and Nov. 1, 1900.

HIGH-GRADE STOCK BY RETURN MAIL MY SPECIALTY.

One untested queen, 75c; 6 for $4.25; 12 for $8.00.
One tested queen, $1.25; 6 for $6.50; 12 for $12.00.
One 1-frame nucleus, $1.00; 6 for $5.50; 12 for $10.00.
One 1-frame nucleus and queen, $1.75; 6 for $9.00; 12 for $17.00.
Two, 3, and 4 frame nuclei, 65c per frame to above prices for extra frames wanted.
For each dozen queens or nuclei ordered at above rates I will mail in August a **SELECT TESTED QUEEN.**

ROOT'S GOODS at ROOT'S PRICES,
Plus carload rate freight.

Bees, Honey, and Beeswax bought and sold.

W. O. VICTOR,
Wharton, Texas.

Don't Buy Supplies

Until you see my 40th annual catalog. A full line of hives and fixtures best adapted to our New England climate. Also best brands of **Comb Foundation and Section-boxes.** I have also made arrangements to keep quite a general stock of

A. I. Root Co.'s Goods at Their Prices.

Parties desiring these goods can get them of me, and **Save Freight Charges.** Bees, Queens, and Nucleus Colonies from the **very best strains** in America. A 40-page illustrated catalog free. Address

W. W. Cary,
Lyonsville, Mass.

Square Cans for Extracted Honey.

60-lb., 2 in case, 85c; 10 cases, $7.50; 20 cases, $14.00. 1-gal. cans, 10, $1.30; 50, $6.25. ½-gal. cans, 10, $1.20; 50, $5.00.

July 1st, 3-frame nuclei, with Italian queens, $2.50; 10 for $20.50. Untested Italian queens, 65 cents. Tested Italian queens, $1.00. Illustrated catalog of a bee-keeper's every need, free.

Apiary, Glen Cove, L. I. **I. J. Stringham, 105 Park Place, New York.**

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Honey Column.

CITY MARKETS.

PHILADELPHIA.—The market has dropped very materially in extracted honey. It is now arriving slowly, and parties having held old honey for higher prices are losing money. We quote old extracted honey, white, 6@7; no old comb in the market. We have made some sales of new comb at 13@14. Beeswax, 26. We are producers of honey—do not handle on commission.

WM. A. SELSER,
June 20. 10 Vine St., Philadelphia, Pa.

KANSAS CITY.—We have a shipment of new comb honey in transit from Florida. The supply of old extracted is very light, mostly candied. No change in prices of either comb or extracted since our last quotations. No beeswax in market.

June 20. C. C. CLEMONS & Co.

DETROIT.—The crop of last year has about disappeared in this market, and the new crop will find a bare market. Beeswax, 24@25. Supply good.

M. H. HUNT & SON,
June 22. Bell Branch, Mich.

BOSTON.—There is nothing new to note in our honey market. Prices are the same as per our quotation a short time ago, with practically no demand, as is usually the case this time of the year.

BLAKE, SCOTT & LEE,
June 19. 33 Commercial St., Boston, Mass.

CINCINNATI.—The market on honey at present is in an unsettled condition owing to the uncertainty of the crop. There is some Southern extracted honey coming in which finds ready sale at prices ranging from 6½@7½, according to quality. Beeswax, 25@26

C. H. W. WEBER,
Successor to Chas. F. Muth & Son,
June 19. 2146-48 Central Ave., Cincinnati, O.

MILWAUKEE.—The old crop of comb honey is nearly all out of sight, and the receipts of late have been very small. We had a small lot of very nice white, clean, good-flavored, well-graded section honey, and sold it at 18c, and could sell more of the same quality. If any shippers have such, we advise them to send it here. We can now quote fancy 1-lb sections, 16@18; A No. 1, 1-lb. sections, 15@16; No. 1, 1-lb. sections, 14@15; dark or amber, 1 lb sections, 12@14. Extracted in barrels, kegs, and pails, 7@10, nominal. Dark or amber, nominal, 6½@7. Beeswax, 25@27.

June 19. A. V. BISHOP & Co.

CHICAGO.—Not any new comb honey on the market, with the exception of a little sweet clover, which, owing to the scarcity of comb honey, has sold at 15c per pound; extracted is slow of sale at 7, about the highest price that can be obtained for white; 6½@7 for best ambers, and 5½@6 for dark grades. Beeswax, 27@28.

R. A. BURNETT & Co.,
June 19. 163 S. Water St., Chicago, Ill.

NEW YORK.—A little new comb honey is arriving, which sells on arrival at 15 for fancy white and 12@14 for off grades. No demand now for dark comb. Extracted honey remains quiet. Some new crop is arriving from the South, though the market remains unsettled and irregular. Beeswax firm at 27@28.

HILDRETH & SEGELKEN,
June 21. 120, 122 West Broadway, New York.

ALBANY.—Nothing doing in honey now. Beeswax steady, 27@29. MACDOUGAL & Co.
Successors to CHAS. MCCULLOCH & Co.
June 20.

WANTED, HONEY AND BEESWAX.—We have a tremendous and growing trade in this line, and should like to hear from all having such goods to sell in any part of the country, with quantity, description, and lowest cash price.

THOS. C. STANLEY & SON, Fairfield, Ill.

WANTED.—To buy honey. Should like to hear from parties having extracted honey to offer, and their best price, delivered at Cincinnati. I pay cash on delivery.

C. H. W. WEBER,
Suc. to C. F. Muth & Son, Cincinnati, Ohio.

WANTED.—Comb and extracted honey. State price, kind, and quantity. R. A. BURNETT & Co.,
163 South Water St., Chicago, Ill.

Marquette, on Lake Superior,

is one of the most charming summer resorts reached via the Chicago, Milwaukee & St. Paul Railway.

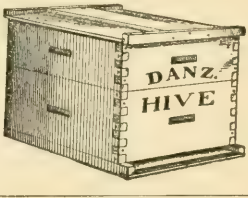
Its healthful location, beautiful scenery, good hotels, and complete immunity from hay fever, make a summer outing at Marquette Mich., very attractive from the standpoint of health, rest, and comfort.

For a copy of "The Lake Superior Country," containing a description of Marquette and the copper country, address, with four (4) cents in stamps to pay postage, Geo. H. Heafford, General Passenger Agent, Chicago, Ill.

FACTS About Bees.

REVISED EDITION.

How to get
GILT-EDGED HONE
Send 2c stamp to
THE A. I. ROOT CO.
Medina, Ohio,
or F. Danzenbaker,
Box 66, Washington, D. C.



ITALIAN BEES and QUEENS FOR SALE

Queens, $1.00; bees, by the pound, $1.00; nuclei, two frames with queen, $2.00; one frame, $1.50; full colonies, $4.00.

MRS. A. A. SIMPSON, Swarts, Pa.

WANTED.—To sell Darling strawberry-plants at 35 cts. per 100, postage paid; ready for immediate delivery. H. FITZ HART, Dalkeith, Fla.

Sharpless Cream Separators—Profitable Dairying.

SPECIAL NOTICES BY BUSINESS MANAGER

SPECIAL BARGAINS IN BICYCLES.

We direct attention again to the advertisement on another page of bicycles at a special low price. Nearly all of these wheels are sold; and if you expect to take advantage of this offer you will need to speak quick.

BEESWAX LOWER.

The market price of beeswax is a little lower; and what we take in from now on will have to be held over for use next season. Until further notice we will pay 24 cents cash, or 26 cents in trade, for average wax delivered here.

NO. 2 SECTIONS.

We have been very careful in grading our sections this year, and the No. 2 grade runs better than usual, as we have packed a larger per cent as No. 2. We have an over-supply of this grade, and can recommend them to those who want something good at a lower price than No 1 grade. Your honey will look just as well in them as in the whitest sections made.

A TRIP TO EUROPE.

The one who presides over this department expects to sail from Boston on Tuesday, July 3. on the steamer Saale, with the Christian Endeavor hosts to the International C. E. convention in London, England. After spending ten days in London and vicinity we sail to Antwerp, and spend three weeks on the continent visiting points of interest in Belgium, Germany, Switzerland, and the World's Fair in Paris. Returning to Great Britain we spend about three weeks longer visiting business acquaintances and friends, and may also attend the International Bee-keepers' congress in Paris in September. I hope to give some account of the trip in our columns. I shall carry a pocket kodak. with a good supply of films for lasting impressions of some of the scenes visited.

Special Notices by A. I. Root.

ONION SEED.

We still have some left of the Globe Danvers, Wethersfield, and Prizetaker. Price 40 cts. per lb. for Wethersfield; 50 cts. for Danvers; $1.00 for Prizetaker. These low prices are because it is late in the season.

GARDENING UNDER GLASS; BULLETIN BY THE NORTH CAROLINA EXPERIMENT STATION.

This was written especially for the climate of North Carolina; but, notwithstanding, it contains a great amount of matter valuable for almost any climate. While it is mainly devoted to tomato culture, in the latter part it considers hot-beds and cold frames for lettuce (glass covering contrasted with cloth), and a great variety of vegetables and garden-stuff. The bulletin is exceedingly practical, and was written, without doubt, by one who has been right in the work and made a success of it. It is mailed free to any address in North Carolina, on application; but I presume it will be sent anywhere if you enclose a few postage-stamps. Address George T. Winston, Director of the Experiment Station, West Raleigh, N. C.

SEEDS THAT HAVE ADVANCED IN PRICE SINCE OUR SEED CATALOG WAS PRINTED.

Crimson or scarlet clover, new crop of 1900. will be $5.50 per bushel; half-bushel, $3.00; peck, $1.75; 1 lb., 10 cts; 1 lb. by mail, 20 cts. A whole bushel or more may have to be shipped from Baltimore, the locality where it is grown. We may be able to give better prices later; but we have written north, east, south, and west for quotations, and the above is the best we could do. Sweet clover will be 15 cts per lb. in any quantity until the new crop comes in; by mail, 25 cts. per lb. Buckwheat, a nice article, is $1.10 for a single bushel; 2 bushels or more, $1 00 per bushel. We can furnish every thing else at present writing at the prices quoted in our seed catalog, which will be mailed free on application.

SEEDS WANTED, BOTH OF BLACK AND WHITE CALIFORNIA SAGE.

I should like to try the California white and also the black sage—not to cultivate, but to scatter the seeds about the hills and let the plants take their chance; and should the climate and soil be suitable they would, perhaps, in a number of years, establish themselves here. I would, therefore, ask the favor of sending me seeds of both these sages, or kindly to request somebody else to do so should you not be able to supply them yourself.

Under separate cover I am sending you postoffice order for 5 shillings, payable to The A. I. Root Co.

RICHARD BEUHNE.

Tooborac, Victoria, Australia, Apr. 24.

Now will some of the California friends be so kind as to mail direct to friend B., one or both of the above sages? and please also mail some to us here in Medina; and as we have the money sent, we will remit from here. We made a similar request some time ago for seed of California sage, but everybody seemed to be too busy to gather it. I hope this and a request from far-away Australia will induce some one to send our friends at least a few seeds to try. The plants are easily raised, for we have grown them several times on our own experimental grounds, but neglected to save seed.

KIND WORDS FROM OUR CUSTOMERS.

GLEANINGS has saved me its cost ten times over.
Whittier, N. C. J. ULRICH GIBBS.

I received the queen all right, and introduced her according to directions, with success. I am very much pleased with her. Have you more of the same kind in stock? ALFRED FOERTCH.

Enon Valley, Pa., June 21.

Dear Sirs:—I have just received an extractor which I bought of you, and after trying it I am fully satisfied that it is a genuine first-class machine, and is worth every cent it cost. I must thank you for your very fair way of dealing. WINTON BALL.

Rugby, Va., June 16.

A KIND WORD FROM ONE WHO TOOK THE TOBACCO PLEDGE THROUGH GLEANINGS 11 YEARS AGO.

Mr. A. I. Root:—I inclose 25 cents in stamps for a trial subscription. I have a late sample copy, but it doesn't seem to be as good as it was in 1887 and '89. I took it then, and am one of the fellows whom you gave a smoker to for quitting tobacco, as you will see by my letter in GLEANINGS for Aug. 1, 1889

I must say I have never tasted the filthy stuff since. It was eleven years the first of last April, and I have entirely lost all the appetite for it, and hate the smell of it now as much as I used to like it. I wonder how many you sent a smoker to have held out. There were quite a number of letters in GLEANINGS at that time, and I thank God that he gave *me* the victory to overcome the evil. I still have the smoker; and when I see it, it brings to my mind my pledge. I should like to see this printed in GLEANINGS, so that all may see I still am a non user of tobacco, and that people *can* quit using it, so I guess you are not entitled to any pay for a smoker from me.

Western, Neb. W. J. MCADAMS.

[Why, friend M., perhaps the very reason why GLEANINGS is "not as good as it used to be" was because you stopped taking it during all of these 11 years And another thing: If GLEANINGS was the means of leading you to victory over the evil habit, don't you think you ought to have held to it during all this time? Well, never mind; but God be praised that at least one who took the pledge bids fair to endure to the end.]

Italian Queens. Tested, $1 00 each; untested, 70 cents each. Satisfaction guaranteed. **E. W. HAAG, Canton. O.**

Stock Differs.

One spring, when living at Rogersville, and getting my living by the production of comb honey, I bought three lots of Italian bees. One lot of 20 colonies was from near home; another lot of 20 came from 30 miles away; another lot of 30 from 80 miles away. Each lot of bees had peculiarities that seemed to pervade every colony of the whole lot. The bees of one lot were good workers—just about like the bees I already had. My average that year was 50 lbs. a colony, and these bees came up to the average; but they were the most vicious bees that I ever attempted to handle. They were perfect devils—that's the only word that fully describes their disposition. As soon as possible their queens were replaced with others; and, towards fall, peace again reigned in the apiary. Another lot was easy enough to handle, but LAZY is the only word that fitly describes the bees. Honestly the average of this lot was only 25 lbs. The lot of 30 was as peaceable a lot of bees as I ever had in my apiary. I doubt if I was stung by one of them unless I accidentally pinched it. The average of this lot was 60 lbs.; and quite a number of individual colonies stored over 75 lbs. of surplus—something that was not done by any colony of any other lot of bees in the yard.

Such experiences as these have thoroughly convinced me that there is a difference in bees in regard to their disposition, industry, and various other traits. What bee-keeper of experience has not noticed here and there a colony far outstripping the general average? This may not be quite so noticeable if a man keeps the same strain of bees year after year, but the one who buys queens occasionally, and thus has several strains of bees, will surely notice it

For many years I have been buying and selling bees and queens, getting them from a great variety of sources, and I can honestly say that, of all the strains I have in my yard, none have surpassed in gentleness, industry hardiness, and finish of capping, that of a certain breeder who, for 20 years, has been working, by crossing and selection to develop a superior strain of three-banded Italians. He has paid a great deal more attention to the development of this stock than he has to its dissemination and sale. Perhaps he has never fully realized what he has accomplished—not having other stock with which to compare it, as I have had. Now that I have become fully convinced of its superiority, I am going to help him, myself, and my readers, by advertising this superiority, and offering queens for sale.

The price of these queens will be $1.50 each. This may seem like a high price, but the man who pays it will make dollars where this breeder and myself make cents; and when you come to read the conditions under which they are sold, it will not seem so high. The queens sent out will all be young queens, just beginning to lay but, as there are no black bees in the vicinity, it is not likely that any will prove impurely mated. If any queen SHOULD prove impurely mated, another will be sent free of charge. Safe arrival in first-class condition will be guaranteed. Instructions for introducing will be sent to each purchaser, and if these instructions are followed, and the queen is lost, another will be sent free of charge. This is not all; if, at any time within two years, a purchaser, for any reason WHATEVER, is not satisfied with his bargain, he can return the queen, and his money will be refunded, and 50 cents extra sent to pay him for his trouble. It will be seen that the purchaser runs NO RISK WHATEVER. If a queen does not arrive in good condition, another is sent. If he loses her in introducing, another is sent. If she should prove impurely mated, another is sent. If the queen proves a poor layer, or the stock does not come up to the expectations, or there is ANY reason why the bargain is not satisfactory, the queen can be returned and the money will be refunded, and the customer fairly well paid for his trouble. I could not make this last promise if I did not KNOW that the stock is REALLY SUPERIOR.

I said that the price would be $1.50 each. There is only one condition under which a queen will be sold for a less price, and that is in connection with an advance subscription to the REVIEW. Any one sending me $1 00 for the REVIEW for 1900 can have one queen for $1 00; that is, I will send one queen and the REVIEW for 1900 for only $2.00; and in addition I will send 12 back numbers of the REVIEW free. Just see what you can get for only $2 00: 12 back numbers, the REVIEW for all of 1900, and one of those superior queens.

W. Z. Hutchinson, Flint, Mich.

BEES THAT GET THE HONEY.

"I bought fifteen queens last year. The six I got from you have about completed their first supers, 30 sections. None of the others have yet entered theirs."
W. W. Erb, Ashland, Oregon, April 22.

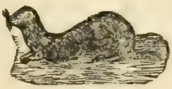
The above explains why my customers "stick to me." They like nice gentle bees that pile up the honey. No pains is spared to have *every queen* as *good as possible* A few last year's select, $2 00. Breeders, $3 to $4.00. Untested, 75 cts.; six for $4.00; dozen, $7.50; for select, add 25 cts. each. No culls sent out. Circular free. See GLEANINGS, April 15.

J. B. CASE, Port Orange, Fla.

Albino Queens. If you want the most prolific queens; if you want the gentlest bees; if you want the best honey-gatherers you ever saw, try my Albinos. Untested queens, $1.00; tested, $1.50.

J. D. GIVENS, Lisbon, Texas.

1200 FERRETS FOR SALE. Small, medium, and large sized; some trained. **First-class** stock. New price list free



N A. KNAPP,
Rochester, Lorain County, Ohio.

American Poultry... Journal. 25c 1 Yr.'s Trial Subscription 25c

AMERICAN POULTRY JOURNAL,
— Room 500 —
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San Louis, Col., March 2, 1900.
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GLEANINGS IN BEE CULTURE

A Journal Devoted to Bees and Honey and Home Interests.
Illustrated Semi-Monthly
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STRAY STRAWS FROM DR. C. C. MILLER

WILL THE FRIENDS who think bees of choice select too old larvæ for queen-rearing please make some careful observations regarding the matter, and report? It is not a matter of reasoning, but a matter of fact.

PLEASE UNDERSTAND that cell-cups with small bottoms may be just as large as those with large bottoms. Very soon the larva is floated out of the small part, and then it makes no difference how small it had been.

IN DISCUSSING shade for hives, p. 474, the comfort of the bee only is considered. I care something for that, but my chief reason for wanting shade is to have a comfortable place for the bee-keeper when working at the hives.

IN HIS VIEW that it is better to let a swarm build its first five combs without foundation, G. M. Doolittle is supported by no less an authority than the lamented C. J. H. Gravenhorst. But that's a new wrinkle of Doolittle to set off the five frames not till two days after hiving. No doubt he has a good reason for it. What is it, Bro. D.?

THOSE "GOBLET" cell-cups of Pridgen's are all right. He fastens them on the cell-bar by pressing them down upon two headless nails projecting $\frac{1}{16}$ inch. In "this locality" we make a good and rapid job by dipping the bottom of the goblet in melted wax and setting it on the bar. [Those goblet cell-cups are as near perfection as any thing can be.—ED.]

SOME SAY apple-bloom honey is good in color and flavor; others say not. It is possible these latter have cherry and plum mixed with their apple honey. [There is a possibility that honey from cherry and plum has a strong bitter taste that honey from the apple-tree has not. This might account, as you say, for the variety of opinions as to the quality of such honey.—ED.]

UNCLE LISHA has taken up an exceedingly important theme, "breeding for improvement," and he's handling it well. A point to be emphasized is that it is not merely professional queen-breeders that should be working for improvement by selection, but *every bee-keeper* that has more than one colony of bees. [A great deal can be done by selection. See editorial in this issue on red-clover and long-tongued bees.—ED.]

"I DO NOT BELIEVE a particle of nectar is deposited in the daytime," says A. J. Wright, p. 479. How about those who say they have seen it? For example, A. I. Root, in A B C, under "Figwort," says he saw the tiny drop of nectar form over and over again after being licked clean by the bees. [So have I seen it, not only on the figwort but on the spider-plant.—ED.]

AN EPIDEMIC seems to prevail nowadays in the way of getting up new bee-diseases. Foul brood and diarrhea used to hold full sway; now we have at least two new diseases that are named, with one or more not yet christened, and dear knows how many more are to come. [We have had these same bee-diseases before, but now we are getting to know our friends the enemy.—ED.]

IF PHILO WOODRUFF had known beforehand of that picture on page 474 he probably would have put those hives in straighter rows. [Tell Philo that I am liable to come around with a camera at almost any time; but, seriously, I like to catch our bee-keeping friends off their guard—not fixed up for the occasion, but in their every-day year-in-and-year-out way of doing things.—ED.]

SPEAKING of robbing, many times the very best thing is to do nothing. When robbers get started on a week queenless colony, it is about as well to let them finish up first as last. If there is much honey in the hive it can be taken out, leaving just a little for the robbers to finish up. If the colony is strong enough to be worth saving, giving it a queen will make it pluck up courage to defend itself.

THE SEASON has been remarkably cool. Clover bloom yielded nothing till four weeks after first bloom, but is now yielding slowly, beginning about June 18. [It is a comfort to know that clover is not an entire failure in your locality, for I am afraid it is so in many places. The clover in your vicinity has a fashion of beginning slowly, and keeping up a continuous flow for a considerable length of time. Success to you.—ED.]

FOR SMOKER FUEL, L. Highbarger uses cotton waste that train men have thrown away along the railroad after it has been used on car-axles. I've been using it, and am much pleased with it—lights easily, burns long, and makes a good smoke. But it is black and greasy, and unpleasant to handle. [Yes, cotton waste would make first-class smoker-fuel; but where do you get it—by tramping up and down the railroad tracks, or by begging it of the railroad men?—ED.]

YOU ARE AFRAID, Mr. Editor, E. F. Pitmann's foundation would bulge. I don't believe it would if the main part of the foundation has space enough between it and the bottom of the section. You see the bulging would all be done by the little part. If the entire edge touches the bottom, it will bulge sure. His plan makes sure that the section is fastened sufficiently at the bottom to make it safe for shipment, but I should not expect the entire bottom to be built down as well as with bottom starters.

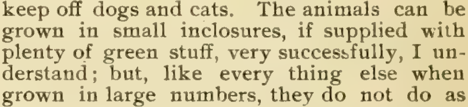
YE EDITOR says cross-bred bees are as good for comb honey as Italians, and some prefer them. Of two colonies harvesting an equal crop, I'd much rather breed from the Italian. The result will be more uniform. If the cross is *enough better*, then I'd take the cross to breed from. I shouldn't get as even a lot, but I would average more honey. [While I believe that hybrid bees are as good for comb honey as the Italians, yet I would always breed from the latter stock, for the bees will turn into hybrids soon enough without trying to breed them.—ED.]

"WE ARE TOLD that the Hoffman frames can be picked up in pairs; and what of it if they can? How often do you want to pick them up in pairs? And what do you want to pick them up that way for?" says M. W. Shepherd, p. 478. We want to pick them up in pairs as often as we want to take two frames from one hive to another while one hand is occupied carrying the smoker. We want to take two or three at a time to avoid the extra trip that would have to be made if only one at a time were taken. I *can* carry two or three loose hanging frames in one hand, and I can hurt my fingers pretty badly by it too. [Just so.—ED.]

IF CANKER WORMS work on lindens the same as on apple-trees, it will pay to spray that linden orchard at Medina. Within view of where I write, hundreds of apple-trees were killed outright by canker worms. The first year didn't seem to hurt the trees much, for they sent out new leaves after the worms stripped them; but the fourth year finished them. Other trees right beside them were sprayed, and saved all right. I think they were sprayed only once or twice in all. [Goodness me! We have about 3000 basswood-trees in our basswood orchard that are anywhere from 15 to 30 feet high. To spray that whole orchard would be a job, to say nothing of the expense for chemicals. If the worms come back next season, as we fear they will, we shall be prepared to give them fits.—ED.]

YOU ARE MAD, Mr. Editor, because I don't tell whether I think bees sometimes sting without stopping to feel where they sting. I don't think a little thing like that should break our friendship, and I would just as soon tell you as not. Some people would get mad, and be too stubborn to tell you; but I'm not one of that sort, and, as I said, I'd just as soon tell you as not; but the fact is, I don't know. [Just like you. I am mad because you fooled me again. Did you never have a hybrid make a dart from a hive, like a bullet, and strike its sting the moment it touched your person? Unless I am very much mistaken, the instant the bee's feet touch, the sting is doing its work. This is not invariably the case, but under some conditions, as after a sudden snap or jar of the hive on a cool day. Now, Dr. Miller, what do you *think*, if you don't *know?*—ED.]

WHILE BELGIAN HARES are having such a boom, some one tell us how big an inclosure they must have. Must it have a floor? How protect from dogs? [The Belgian hares that I saw in Colorado were confined in pens about six feet square, I think with floor bottoms, with poultry-netting tops. The wood bottoms will be necessary to prevent the hares from burrowing out, and the netting is probably to keep off dogs and cats. The animals can be grown in small inclosures, if supplied with plenty of green stuff, very successfully, I understand; but, like every thing else when grown in large numbers, they do not do as well. Every poultry-keeper knows it is one thing to take care of and grow successfully a dozen hens and a rooster, and quite a different thing to manage ten times that number. The same proposition holds true in bee-keeping, and I know no reason why it should not with growing Belgian hares. The hares can be raised wherever it would be possible to keep chickens, and they will stand much closer confinement. Now, please understand that I have had no personal experience with these hares. These statements are all based on what I have learned from different sources. On the other hand, there is no question but that Belgian hares are having a great boom. Like every thing else that has a boom, extravagant statements are made.—ED.]



PICKINGS

FROM OUR NEIGHBORS' FIELDS

BY STENOG

The sun has reached the Cancer's line,
And summer has begun;
All nature teems with active life,
The bees in concert hum.

AMERICAN BEE JOURNAL.

A few weeks ago the New York *Mail and Express* printed a fake yarn to the effect that it is customary among bee-keepers to feed their bees with glucose and sugar, and that the bees "do nothing the livelong summer but pack glucose into their hives from an open barrel left standing close by." This matter was fully reviewed in this department on page 339. This nonsense was copied by the editor of the *Farm, Field, and Fireside*, who crawls out of it in this way:

> "All this is sad if it is not funny. If there is a child six years old who reads the *Farm, Field, and Fireside*, and who does not know that the bee makes over what it gets from the flower, or from the feeding-tray, and produces real honey; and if there is any one of our readers that did not see the 'pleasantry' in the glucose story, we certainly recommend to them a vacation, and a little free air and sunshine. They are working too hard. And our good friends of the *Journal* need to cheer up and expend a little of the proceeds of their industry in making a good bee-paper, in a playtime in the country. We should be pleased to join them in a good old-fashioned bee-hunt, such as we used to have with our father, either in apple-blossom time or later, when the goldenrod is out, and the bees are happiest."

Mr. York shows up the whole fallacy of this "pleasantry" business by showing how much evil a similar statement caused bee-keepers some twenty years ago. He winds up by saying:

> It is to the credit of the *Farm, Field, and Fireside* that it has done its part toward discrediting the "poor joke," and it would be still more to its credit if it could have made a manly retraction without the attempt to bring ridicule upon those who made a proper protest against its unintended injustice
>
> It is to be hoped that good, and good only, will come to the six-year old readers of our esteemed contemporary from its wholesale recommendation of a vacation, for it is certain that not one of them knows "that the bee makes over what it gets from the flower or from the feeding tray and produces real honey," seeing that even a brilliant six-year-old can hardly *know* what is *not true.*

Even in the time of Solomon such men were living. He says of them: "As a mad man who casteth firebrands, arrows, and death, so is he that deceiveth his neighbor, and saith, Am not I in sport?" They call it "pleasantry" nowadays. Any newspaper clipping that imputes to a large number of respectable people, or all of a trade, a criminal way of doing business may be set down as a malicious slander.

EL COLMENERO ESPANOL.

It seems they are having trouble with bees in Uruguay in the public scientific schools. The following item in *El Siglo*, dated April 3, from Palmira, Uruguay, is translated from the Spanish, and it certainly constitutes good reading:

> There is much comment anent the disposition of the Auxiliary Commission, which has ordered the removal of apiaries from agricultural stations, alleging that the bees are prejudicial to agriculture, while the scientific stations are of entirely the opposite opinion. There is now in vogue in the Uruguay station the North American system of apiculture, which is of much importance. It is the first one installed in Uruguay.

This is followed by a most vigorous and able defense of the bee as the best friend of the farmer and orchardist.

BRITISH BEE JOURNAL.

The great number of announcements of "Shows to Come" in England indicates that the interest taken by bee-keepers in such exhibitions is not only maintained but extending. This helps greatly to bring British honey to the public notice. The confectioners of London have a grand display of eatables there in September, and this is to be followed by an exposition by the grocers. At these exhibits honey will be made a great feature.

* * *

In speaking of honey, Mahomet says, in the Koran, "This sweet, wholesome substance, which sustains and strengthens the body, which cures all maladies, is a thousand times preferable to the poisons administered by the doctors to the human race." Again, "Bees spend their nights out of doors, except Thursday evening, when all return home, because of Friday, the holy day." That sounds a little superstitious; but when Mahomet had been dead a thousand years, and books were common in England, it was commonly believed there that bees built chapels and celebrated the Lord's supper in the hive; and even to-day many superstitions regarding them are alive in all countries.

CALIFORNIA ECHOES

BY J. H. MARTIN.

From recent issues of GLEANINGS I note that not a few bee-keepers, and notably Dr. Miller, page 425, have much trouble in finding the queen. A good share of this trouble is from lack of concentration of attention. The greater portion of bee-keepers, while hunting for the queen, scatter their thoughts. For instance, if an unusually nice yellow drone crosses the vision, the bee-keeper exclaims, "My! isn't he a beauty? wish I could get a queen mated to him." Then with drone in the eye, more drones are seen. Then a bee loaded with pollen will divert the eye, or a sunken cell cup. "Wonder if that is foul brood;" and with this thought in mind the queen might pass directly over the spot and not be noticed. A person looking for the queen should look for her and nothing else. Every thing but the queen must be a blank. A good aid to concentration upon this object is to keep repeating in the mind, "*queen, queen,*" and mentally hold her picture steadily in the mind. With the other precautions of having good eyes, and not too much disturbance, the queen will be found with little trouble. But it is not at all mysterious that Dr. Miller can not find a queen, even where there are but few bees. He is distracted by being too full of straw. I have no doubt that, when hunting for a queen, he keeps repeating to himself, "Stray Straws, Stray Straws." The mystery in the case, Mr. Editor, is that he can even find a bee-hive.

On page 334, *American Bee Journal* for May 24, Mr. Reider expresses some doubts as to the correctness of Prof. Cook's description of the Belgian hare, alleging that they are not "bulky, fat, and lazy," as Prof. C. describes them in a recent issue of that journal. Allow me to corroborate all Prof. Cook says about the Belgian hare. Our common jack rabbits are genuine racers, and would fit the description given by Mr. Reider. But the domesticated Belgian is a plump and doughty-looking animal. Perhaps our genial climate has something to do with this plumpness.

I notice there is some conflict between the hare and the bee-keeping industry. The bee-keeping end is likely to be neglected or abandoned altogether. I know this to be the case in some instances. There is hard work out in the sun during the hottest portion of the year, with bees, while with the Belgian hare the work is light and mostly under sheds. The work continues all the year, the interest becomes centered on the hares, and the bees are forgotten. The Belgian-hare business is just booming in this State, and Los Angeles is the head center; and Mr. Reider is right when he says there are hares here that can not be purchased for $1000. Mr. Reider is a New York man, but he seems to be better posted on prices than on the shape of the hare.

About that Mr. Crowder and his 3000 colonies of bees, the statement of which was published in the *American Bee Journal* and quoted from a Tulare paper. I am informed by parties who live near Mr. Crowder that he has only about 800 colonies. The 3000 story was a sensational and gross exaggeration.

King-birds are plentiful here in Central California. Mr. J. C. McCubbin in his queen-rearing apiary near Reedley has secured 14 fertile queens out of 60 hatched. Whether it is the sole criminal or not, the bird gets a good share of the blame.

Advices from H. E. Wilder, of Riverside Co., and who is speculating in beeswax, and is calling upon all of the bee-men, reports that the loss of bees in that and adjoining counties is fully four-fifths. In the Orange districts the loss has not been heavy. Late rains will help out the honey-yield, and bees that have lived up to date will be kept alive. There may be some honey for shipment from favored locations. The prospect is fair for the usual honey-flow in Central California. The weather is a trifle warm now, 102 in the shade. Our hot weather comes in July and August.

Like Bro. Doolittle's old Dutchman, I should like to "arise and ask" what's the matter with E. E. Hasty. Let me quote what he says on page 343, *American Bee Journal:* "Your best girl, if rescued from the ruins of a house wrecked by a tornado." That's a whole romance in a nutshell. When a staid old bachelor like Hasty gets to raving about best girls and tornadoes, there's something worse than a tornado behind it. Yes, sir; it is a strong indication of matrimony. Didn't think that of you, Bro. Hasty (tears, onions in my handkerchief).

Right now I wish to record the fact that O. W. Stearns, a Selma bee-keeper owning about 500 colonies, works them all himself; but he has now left the bees to care for themselves while he is rusticating for three weeks in the Yosemite Valley. That is all right and proper in this country. Alfalfa does not yield honey until the hot weather arrives. The chief danger in May and June is from starvation.

General Correspondence

THE ADVANTAGE OF STIMULATIVE BROOD-REARING FOR THE HONEY-FLOW.

Bottom-board Feeder; Some Interesting Facts and Figures.

BY W. O. VICTOR.

The time will soon arrive when feeding bees for various reasons will be in order, and I have decided to remove the bushel and let the little ray of light that I may have shine forth and help all I can to lead the tempest-tossed seaman on the ocean of apiculture to a haven of success.

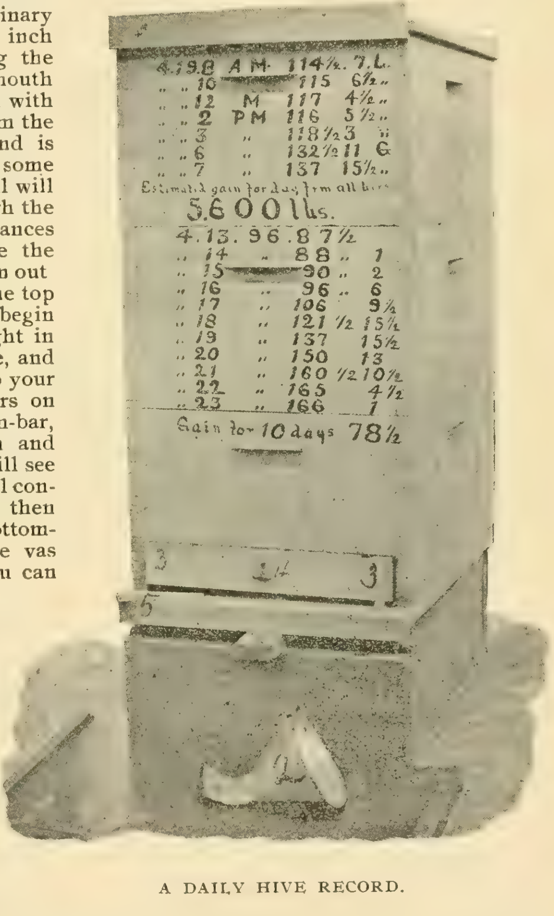
In this locality I have found it best to feed a little for two or three days about six or seven weeks before we expect our first honey-flow, which, with me, is about April 5 to 15, so you see from the 15th to the 25th of Feburary will be the proper time. This will start brood-rearing in a rush; but when the feeding is stopped, the queen will most likely cease laying, to a considerable extent. By this we get about as much brood started as the bees will care for, and near the same age; and it hatches just at the right time to be of vast benefit to raise the bees that will bring in the honey in April. Should we have pleasant weather in March, we shall not be put to the necessity of stimulative feeding, as we have plenty of honey and pollen from the willow, ash, yeopon, and various other forest-trees that yield more or less honey and pollen.

Should the weather be cool and damp we may have to feed again to get brood-rearing to go on as rapidly as is best. Should there be plenty of honey in the hives, and we are not troubled by robbers, I know of no better way to hurry up brood-rearing than to work through the hives and shape things up nicely (however tempted you may be, do not spread the brood until you have the hive well filled with bees); this excites the bees, and causes them to cut into their honey and bring about the desired results. Should the weather continue unfavorable this should be repeated at least once a week; however, in large apiaries, and especially when one has several to look after, as in my case, we can not spare so much time to each hive, and the necessity of quick work has caused me to bring into use what has proven to me to be the best feeder I have ever used—the Dovetailed-hive bottom-board feeder which I use in the manner shown in the illustration. My hive stands on a level from side to side, with the front ½ inch lower than the back end. To use the bottom-board as a feeder, raise the front end and place a ⅞-inch block under it as at 1. This, you see, raises the front end of the bottom-board on a level with the top of the rim formed by the cleat at the back end and the strips along the side, which gives a basin ⅜ inch in depth at the back of the hive, sloping to nothing at the front.

When I first began to use the bottom-board feeder (as we are wont to call it) I had great trouble in getting the honey to flow back in the hive, as the slope was so slight it would frequently overflow in front and cause more or less trouble. Necessity brought to my mind the device shown at 2, which is an ordinary funnel with a flat crooked nozzle 5/16 inch thick by 1½ inches wide. By placing the nozzle in the entrance of the hive, the mouth of the funnel stands upright. To feed with the funnel and bottom-board feeder, warm the honey or syrup so that it flows freely and is not chilling to the bees; hold the vessel some foot or more above the funnel, so the fall will be great enough to force the food through the funnel to the back of the hive (circumstances governing the amount used), then leave the funnel until the food has had time to drain out Should the weather be cool, pound on the top of the hive with the hand until the bees begin to stir. In a few minutes bring your light in proper position, look in at the entrance, and you will see that which will bring to your mind a company of well-drilled soldiers on dress parade. On each side of the bottom-bar, in perfect line, with their heads down and tongues stretched at full length, you will see the happiest set of bees extant. This will continue until the food is taken up, and then comes the cleaning-up spell of the bottom-board, same as "Louis Scherfe's vife vas cleaned up" (page 48). In this way you can feed when the weather is too cool to feed in an outside feeder, and still you do not have to open the hive or give any extra room to hold the feeder, and have no extra expense for the feeders save the little blocks and the one funnel.

In 1896 I had my bees worked up to a high state of perfection, and among the last days of March we had cool damp weather which continued for some two or three weeks. On the morning of April 10 I discovered that some of my strongest colonies had consumed all of their stores, although the rattan was almost in full bloom. Owing to the cool damp weather they were almost in a starving condition. Fortunately this turned out to be a warm pleasant day, and they all got enough honey to eat and a few drops to spare, so I did not have to feed that night. The next day was cloudy with a little north wind and rain, which kept the bees in all day. I knew I should have to feed, so I told the boys to get every thing ready to feed that night; and as soon as it was dark enough for the bees not to fly out and get on a lark over the feeding we commenced. I had the honey in gallon cans. To warm it the cans were placed in a vessel of hot water. One man attended to this part of the work, and the other two picked out the hives to be fed, and did the feeding. I would feel the weight of the hives, and if they were not more than 15 or 20 lbs. heavier than an empty hive I would feed them. I am sure I fed a good many hives that did not really need feeding, but that was better than to miss one that really needed it.

We rushed this work as rapidly as possible, going over three apiaries, and feeding about 300 colonies an average of one pound each, finishing our work at 2 A. M. Sunday, the 12th, we had a continuation of this cool disagreeable weather. Monday morning was dark and dreary, so I told the boys to rest up, as we should have to feed again that night. About 2 A. M. it began to rain in sheets, and continued to pour down until every vestige of cloud was gone. At noon I told the boys that, instead of feeding, we should have to give room to all the bees that were crowded, and accordingly each man went to a different apiary, and by night we had supers or extracting stories on all hives that were crowded with bees, although we had opened some 300 to 500


4.19.8 A M. 114½. 7 L.
" " 10 115 6½ "
" " 12 M 117 4½ "
" " 2 PM 116 5½ "
" " 3 " 118½ 3 "
" " 6 " 132½ 11 G
" " 7 " 137 15½ "
Estimated gain for day from all hives
5.600 lbs.
4.13. 96. 87½
" 14 " 88 " 1
" 15 90 " 2
" 16 " 96 " 6
" 17 " 106 9½
" 18 " 121½ 15½
" 19 " 137 15½
" 20 " 150 13
" 21 " 160½ 10½
" 22 " 165 4½
" 23 " 166 1
Gain for 10 days 78½

A DAILY HIVE RECORD.

hives, some colonies not having a drop of honey in them. We had no trouble with robbers, as the sky was clear with a warm gentle south breeze and an abundance of blooms. Though the nectar was scarce and watery, the bees went for it in a rush.

Between sundown and dark I balanced my scale hive, which you will see by the first line on the middle story in photo, 4/13, 1896, 87½ lbs. The next line of the record was taken at the same time the next day, which shows 88½, 1 lb. gain, and so on. On the 18th and 19th, you see by the record we have 15½ lbs. gain each day. The best days you will see, by comparing dates, is the day preceding and following one week after the night I fed until 2 A. M. Thus I have shown you the most discouraging and the most prosperous periods of my 17 years' experience, within a space of eight days. By following the record to the 23d you will see that ten days covered the entire period of this honey-flow, beginning and ending with a gain of 1 lb. per day, having gained 78½ lbs. in the ten days.

On the top story I wish to show you a record made at different hours during the day. At the top line you will see Apr. 19, 8 A. M., 114½ 7 L., which shows the hive to be 7 lbs. lighter than it was at night on the 18th. Thus you see we had a good working force out at this time. At the third line you will see 12 M., 117, 4½ L. At the fourth line, 2 P. M., 116, 5½L., although two hours later in the day the hive is 1 lb. lighter, which shows conclusively that at least some bees take noon, as some claim. By viewing this record carefully I feel assured that there could hardly have been less than 12 to 15 lbs. of bees in the field during the best hours of the day.

At the bottom of this record you will see my estimate for the day is 5600 lbs. This estimate was made by a close comparison of the condition of all my bees to this scale hive, and the actual gain shown by it, which, in my opinion, is a very close estimate.

Last, but not by any means least in importance, at 3-3 you will see my entrance-contractor, which is a board exactly the length of the entrance, 2 inches wide by ⅜ thick. In the center of this board is a slot crosswise of the board, one inch long. At 4 is a thumbscrew which passes through a washer and through the slot in the contractor, and then through a hole in the front of the hive to a nut that has been let into the inner wall of the hive, so as not to be in the way of any manipulation of the interior. At 5 you will see a wedge that is used to adjust the contractor. Should you wish to close the bees in a hive for any purpose, place the point of the wedge under the contractor, one at each end; loosen your screw, press the contractor down on the wedges, tighten the screw, and the work is done. The wedge at the point is smaller than a bee, so you see this leaves a slight ventilation the full length of the entrance, which, with weak colonies and nuclei, is sufficient, provided the hive is not in the sun. By loosening the screw you can push the wedges in, raising the contractor and giving entrance of any size desired. Tighten the screw, and the contractor stays as you leave it, which is one of its strong points. I have lost many nuclei by a loose stick falling off and letting in robbers. When you want a full-size entrance, raise the contractor up and tighten the screw; and when you want it again, it is right there waiting to be used, instead of being put away in the honey-house, thrown in the trash, or possibly used for kindling, as would be the case with a loose stick, as I and a great many others have used for years. This device is especially useful in rearing queens, as the many small colonies, necessary for the care of so many queens, are such easy prey for robbers. By placing one end of the device down on the bottom-board and adjusting it carefully, we have an entrance that only one bee can pass through at a time, and still have ventilation the entire length of the entrance.

Wharton, Texas, Feb. 1, 1900.

[No doubt there is a very great advantage in feeding at a time that will bring on a large force of young bees ready to catch the expected honey-flow. Mr. Doolittle has long urged the importance of this, and your figures show that much is to be gained from it.

You do not say whether the colony placed on the scales was an average one. I should judge that it must be, from the fact that you used this as the basis for your entire honey-crop; for if this average colony gathered on an average $7\frac{8}{10}$ pounds of honey per day for 10 days, your whole apiary must have been booming, and it speaks well for your method of feeding to stimulate brood-rearing at the right time.

Your figures regarding the weight of bees in the fields are also interesting; but these show conclusively that your colonies must be tremendously strong, and herein lies another secret of your success. That some bees take a rest at noon also appears from your figures. If I understand you correctly, the heaviest forces are out in the morning, and these forces diminish as the day progresses. I hope you will try the experiment further, in order to determine whether this is the invariable rule with other colonies.

Bottom-boards with feeders have very often been used, and are now being used very largely. We feed this way at times, and the plan is perfectly practicable, but of course the bottom-boards must be syrup-tight or else there will be a great waste and a consequent loss next morning. If there are any leaky bottom-boards the trouble may be remedied by coating them with hot paraffine or beeswax.—Ed.]

EXTRACTING FOR WOMEN.

How a Practical Woman Bee-keeper Carries out her System.

BY MRS. A. J. BARBER.

Our extracting-room is 12×18 feet in size, and faces the south. The two bee-escape windows are on each side of and above the little door where we put the honey in. The few bees that come in with the honey, when they find themselves in the house, naturally go to the windows and escape, so do not trouble any one very much.

The extractor stands just opposite the little door, on the north side of the room. The uncapping-tub stands in the middle of the floor, so that two persons can work at it, one on each side. The one nearest the little door takes in the full combs, and shoves out the empty ones when I bring a load to the house; and between times she uncaps combs and hands them to the other assistant, who runs the extractor and uncaps between times. A third assistant takes the honey as it comes from the extractor and fills pails from the tank.

MRS BARBER'S EXTRACTING IMPLEMENTS.

Our tank holds 30 gallons, and has for a cover a tray with a coarse wire-screen bottom. The tray is four inches deep. Into this is spread a wet cheese-cloth, and the honey is poured into the tray, and strains down into the tank. After the tank is nearly full, the one who attends the honey begins to fill pails. As there is a nice honey-gate to the tank, this is pleasant work. Our uncapping-tub is not so deep as the Dadant cans, but wider, and has supports for wooden bars which are used to rest the combs upon while uncapping. As we do not extract until honey is well capped we have lots of capping — sometimes more than our tub will hold, so we ought to have a bigger one.

Our tank stands at the east end of the room, and on one side is a pile of empty lard-pails; on the other side the full ones are piled as they are filled, to wait till there is time to label and crate them. Care is taken not to draw off too much honey from the tank and get the little impurities that rise to the top. We keep the tank not less than half full until we get through, then all little specks and foamy honey come off in the last two or three pailfuls, and all the rest is so pure and nice that it looks like lard when it granulates. As our nights are cool here we don't get to extracting before nine. The bees get cross about four, so we stop early. Usually the last combs are returned to the hives about four, and then comes the cleaning-up.

From 1200 to 1500 pounds is considered a good day's work for four of us. It does not sound very big, but after all it keeps us busy to get it from the hives into the pails and have it all done in good shape. I usually employ some of my neighbors, and pay them in honey. I pay a dollar a day and board. We extract about every ten days at the home apiary; and at the out-apiary, where we extract mostly from half depth frames used to start the bees in sections, we extract about three times in a season.

The preparation of honey for shipment and the care of wax will be the subject of another article.

Mancos, Colo.

[In our issue for April 1, page 258, we illustrated Mrs. Barber's method of conveying the extracting-combs from the hive to the extracting-house; and that article should be read in connection with this. I will explain to those who may not have that number handy, that she has a board, on the under side of which are mounted four casters, making, as it were, a sort of truck. This is placed on the wheelbarrow, which is then run close up to the hive. The supers are transferred from the hive to the truck on the wheelbarrow. The whole thing is then wheeled to the extracting-house, in front of which is a platform. This little truck, with its load of supers, is shoved off from the wheelbarrow to the platform; a trapdoor is raised, and the truck (supers and all) is shoved into the house. Mrs. Barber has every thing down to a system, and it seems to me she answers affirmatively the old mooted question, "Can a woman keep bees?" —Ed.]

THE BELGIAN HARE, AGAIN.

Conservative Answers to Fair Questions.

BY F. GREINER.

Mr. Editor:—In response to your comments on my remarks regarding the Belgian-hare industry, p. 430, I would say that there seem to be some mistaken ideas afloat about the hare business which seem to me to need clearing away. If what I have said should start the hare fever in any one of the readers, it is but right that he should have the whole truth. I am sure I should not wish to mislead any one, nor will I stand idly by and see one misled by others if I can help it.

As I have intimated before, I have grown the hare principally for my own table, and it is a good subject for the purpose. I have kept only three breeding-does generally. In the future I shall be obliged to keep more, for I can scarcely keep any for my own use on account of the demand from far and near.

The cost of growing the hare, as nearly as I am able to estimate it, is about 20 cents for each specimen, growing the animal to weigh about 8 pounds alive.

Right here comes in one of the mistaken ideas about the size of the critter. You state, Mr. Editor, that you have seen them in Colorado of the size of a good-sized dog. That is rather indefinite. I have known a dog to weigh 150 lbs. That, of course, was a large dog. A good-sized dog may weigh 75 lbs., or perhaps only 50 lbs. The Belgian hare does not come anywhere near that figure, I am sure. If the actual weight of the hares in Colorado had been given in pounds it would have been better understood and appreciated. The best that has been attained, to my actual observation and knowledge, is 14 pounds for a male Belgian hare. I know of some to-day, progeny of high-priced imported stock at that, weighing but little more than half of that. A year ago, at our county fair, I bought a male hare having taken the premium over one having received the first prize at the New York State Fair. He weighs now 10½ lbs. My breeding-does weigh about 8 pounds, but could be made to weigh more. Breeding them continuously reduces them in flesh, even with the best of care.

Where a great many breeders are kept, boxes are made use of for their habitations. They are about 16 inches high, 20 inches deep, and 3½ feet long. A good-sized dog confined for a long time would feel uncomfortable in such an apartment; but the hare, being smaller, feels quite comfortable in it.

Prof. Cook states that, according to good authority, a hare could be kept on 4½ lbs. of hay per month, which is not far out of the way for a six or seven pound hare. But with one the size of a good-sized dog I think it would be different.

By the way, fine hay and even timothy hay is not suitable for growing hares. They will waste a great deal of it, and will not do so well on it. Clover hay, if ever so coarse, is to be preferred.

Disease is practically unknown among hares; they are also not troubled with vermin. I have so far lost but one—a half-grown one—probably from feeding an excess of succulent food, or food wet with dew or rain. One must exercise care in this respect. With ordinary care, one need not have any losses whatever.

When stock is closely confined in these small boxes (or hutches) there comes in another feature that will need our attention. It is *cleanliness*. Prof. A. J. Cook said, in *American Bee Journal* a short time ago, "The Belgian hare is of very cleanly habits." In a measure that is true. But if Prof. Cook had bred the hares himself he would have found out that the hare may become very offensive. The solid excrements may be gotten along with without any trouble, but not so the liquid voidings. Dry earth, land plaster, charcoal, etc., will have to be used plentifully to keep things sweet. The hutches will have to be sponged out often; their floors must be made absolutely tight, and a drain provided to carry off the moisture. When the hare is kept not too closely confined, and on a ground floor, with plenty of absorbents, no difficulty arises. The runs may not be cleaned out except each time after the young are weaned from their mothers, which will be every 6 or 8 weeks, when each apartment should be given a thorough going-over, and plenty of new bedding be given. In all our undertakings labor must be reduced to a minimum, and so I believe it is more profitable to lay out a little more money in buildings than to crowd many of the hares into a small space, and then lay out the money in the extra labor. Our aim must be to have the things around us as convenient and self-regulating as possible.

A clipping from the *Farmer's Voice* was brought to my notice recently in which a writer warns the people of the danger that hare-breeding may bring with it; viz., that the hares may become so numerous as to become a source of great annoyance. After watching these animals for years I can safely say that there is absolutely no ground for any fear of that kind. Without the protection of man, the race of hares would soon be extinct. Even should the grown animals escape all the dangers unharmed, they would not be able to bring up a single one of their young. Cats and dogs and crows would pick up the little fellows as soon as they made their appearance. We know this from sad experience. The hunters with their dogs and ferrets would, in a very short time, take care of the grown hares. Why, even the wild rabbit doesn't stand a very good chance in these parts, and will soon need protection for the sake of having any game left at all.

As to their doing any damage—well, of course they will bark young trees sometimes when food is scarce. I have a small park, about 50 feet square, into which I turn young stock. A few fruit-trees stand inside of it, and I have them protected with tarred paper. Last winter, when we had the deep snow, the hares were enabled to reach higher than the protection around the trees, the snow having become crusted, holding up the animals. I should have attended to the matter right away, but I didn't till my children came in one day and informed me of the mischief the little rascals were doing to the trees. During the summer, and when running at large, neither the hares nor the wild rabbits will very often do any injury to trees or to any thing else.

Should any of the readers of GLEANINGS conclude to grow Belgian hares for market, I would advise supplying the home market first, although it may be necessary to educate the people before growing very many. I don't believe the Belgian-hare industry will prove a Klondike for the masses, but, like the poultry industry, it may be a help to them. I have an unlimited outlet for all the hares I can grow, at 15 cents per pound, dressed. This price is for matured animals. Broilers should bring 20 or 25 cents per pound on the same basis. The young animals dress away about

45 per cent; older specimens, about 35 per cent. A broiler would, therefore, bring about 40 cents; a matured one, 75 cents to $1.00. These are the actual prices obtainable here, although our regular hotels will not pay more than 10 or 12 cents per pound. But they would not offer any more than that for fancy capons, and yet I obtained 18 cents for all I grew the past season, and that within 15 miles of my home.

I think I can now leave the reader to judge for himself whether it would be advisable for him to engage in the industry.

I hope the above may answer the many inquiries I have had of the readers of GLEANINGS since I wrote the article for June 1, and I would ask them to pardon me for not answering all the letters received in detail, which would be utterly impossible.

Naples, N. Y., June 14.

[I must acknowledge that my statement in reference to the size of Belgian hares I saw in Colorado, where I compared them to a good-sized dog, is a little indefinite. The specimens that I looked at were larger than any good big cat I had seen; but in referring to the dog I did not have in mind mastiffs, but the common house-dogs one sees every day around home.

Referring to the last paragraph, I hope our readers will bear in mind that it is not feasible or practicable for our regular correspondents to answer by letter all questions put to them. A better way, when sending questions, is to request answers through GLEANINGS. The correspondents will get pay for their time, and will also be able to answer hundreds of others in whose minds the same inquiries may arise.

I have always known Mr. Greiner to be a very careful and conservative bee-keeper, and I assume that he is, as a matter of course, equally conservative on the subject of growing Belgian hares. As I take it, he is interested in them only for market purposes, and therefore has no "ax to grind" for our readers.

I am now arranging to get some specimens, and hope to be able to have a practical knowledge of them myself in the course of time; because, if this business combines nicely with bee-keeping, we should certainly know something about it.—ED.]

FROM THE FRESHLY LAID EGG TO THE FULLY DEVELOPED QUEEN.

Age of Larvæ that Bees Ordinarily Select for Queen-rearing; Some Interesting Observations.

BY DR. C. C. MILLER.

On page 199, Vol. I. of the *American Bee Journal*, the Baron of Berlepsch gives details of an experiment he made, in which queen-cells were sealed nearly 10 days after the eggs were laid, and the queen emerged from the cell fully 18 days after the laying of the egg. In another experiment the time was 17 days. "These experiments," he says, "show that the opinion generally entertained, that the queens emerge between the 17th and 18th day after the eggs are laid, is correct." This was forty years ago. Later, 16 days came to be accepted as the orthodox length of time for a queen, and still later some have called the time 15 days. T. W. Cowan says that queens mature "in from 14 to 17 days from the day the egg is laid." In a table of "Metamorphoses of Bees," British Bee-keepers' Guide-book, page 10, he gives what is probably meant to be the average, as follows:

1.	Time of incubation of egg......	3	days.
2.	Time of feeding the larvæ......	5	"
3.	Spinning cocoon by larvæ......	1	"
4.	Period of rest........................	2	"
5.	Transformation of larvæ into nymphs..................................	1	"
6.	Time in nymph state..............	3	"
	Total..................................	15	"

It is probable that a principal reason for the formerly accepted longer time, and for the considerable variation allowed by so good an authority as Mr. Cowan, comes from the fact that nuclei instead of full colonies were used in some of the cases for observation. Berlepsch used "a small forced swarm" in the experiment which gave him 18 days. Possibly if observations were always made with full colonies under favorable conditions Mr. Cowan's 15 days might never be exceeded. It will be noted that Mr. Cowan has the larva fed 5 days and Berlepsch nearly 7, Cowan's queen being sealed when 8 days old, and Berlepsch's when nearly 10, counting from the laying of the egg.

Incidentally, I made some observations last summer as to dates of sealing and hatching, while experimenting as related on page 834 of GLEANINGS for last year. It may be remembered that the five combs, *a*, *b*, *c*, *d*, *e*, were given in succession to the same queen to be laid in, so that every egg in any comb was older than all the eggs of any comb coming later in the list. I rather expected to find that the cells, both worker and queen, would be sealed in the order of their ages, all the cells of *a* being sealed before any cells in *b*, and so on. Such was not the case, for July 7 I found 6 worker-cells sealed in *b* while some cells were still unsealed in *a*. It might be supposed that the position might have something to do with it, the bees being more slow to seal cells in the outside comb, *a*. But this argument could not apply at the other side of the brood nest, for July 12 I found 4 worker-cells sealed in *e* while there were cells still unsealed in *d*. It seems clear that in this case cells were not sealed strictly in the order of ages.

July 6 I found about 10 square inches of sealed worker brood in *a* when the oldest larva was less than 8 days and 30 minutes old (I count always from the laying of the egg). This agrees with Cowan's table, "time of feeding the larvæ, 5 days." As some little time should probably be allowed for the sealing of 10 square inches, it is likely that some of the cells were sealed when the inmates were less than 8 days old. Next day at 4 P. M. some cells were still unsealed when all had passed the age of 5 days 4 hours.

Comb *b* gave much the same testimony: 6 worker-cells were sealed when none had passed the age of 8 days 4 hours (they may have been considerably short of that), and a few cells were left unsealed when all had passed the age of 8 days 2 hours.

On comb *e* four worker-cells were sealed when the oldest lacked 45 minutes or more of being 8 days old. On this same comb, the last queen-cell started (with too old larva) was not sealed till it was 9 days 3 hours old or older.

July 5 I started an experiment for the sole purpose of deciding something about the times and seasons of development. At noon I gave to No. 84 an empty comb for the queen to lay in, and took it away 4 hours later, with about 80 eggs in it, putting it over an excluder on 51. This upper story was strong in bees, and it was no doubt well cared for. July 8, 4 P. M., only 5 eggs were hatched. At this time all the eggs were at least 3 days old, showing that most of them did not hatch till after 3 days old. I think others have reported considerably less than this, showing that the bees are not uniform in their proceedings, but very likely Mr. Cowan is right in giving 3 days as the time for eggs to hatch.

At this time, July 8, 4 P. M., the comb was given to No. 18, its queen, all its brood, and some of its bees being taken away at this time, leaving it a fair colony, but not strong. July 10, 6 A. M., larvæ were lavishly fed, several slightly enlarged as for queen-cells, and one hooded. One or several observations were made daily, but it is not necessary to recite all.

July 13, 6 A. M., one queen-cell sealed and one worker-cell. These were somewhere from 7 days 14 hours to 7 days 18 hours old. At 9 A. M, no change. At noon a few more worker-cells sealed. At 6.15 P M., another queen-cell sealed. This cell must have been sealed when not more than 4 hours under 8 days old, and not more than 6 hours 15 minutes over 8 days old. These were perhaps the only queen-cells started with larvæ of proper age, for the age limit was reached July 11, 4 P. M. But the bees continued to start queen-cells, and seemed especially desperate in the matter when the age limit had been passed some two days, for 16 fresh queen-cells were started between July 13, 6 15 P. M., and 4.30 the next morning. It should be remarked, however, that 4 other cells had been started soon after the age limit was passed.

It would seem as if the attempt to make queens of too old larvæ had the effect to prolong the time of sealing beyond what it would have been if the larvæ had been treated throughout as workers. Notice what follows, and you will see that this is so. When the 8 days from the laying of the last egg had been passed 12 hours 30 minutes, there were 16 queen-cells unsealed. At 17 hours past the 8 days, 9 were still unsealed. At 21 hours past the 8 days, 3 were still unsealed. At 25 hours past the 8 days, 2 were still unsealed. I am sorry to say there is no note when these last two were sealed.

July 20, 6 A. M., no queen had yet emerged. At 10.25 A. M., one was out of the cell and was removed. This queen emerged from the cell in not less than 14 days and 14 hours, and not more than 14 days 22 hours 25 minutes, after the laying of the egg.

There seems nothing in these observations to throw discredit on the table of Mr. Cowan, and it may not be an unfair inference that he drew his conclusions from colonies of fair strength while others used nuclei.

A practical consideration is that those who count upon 16 days from the laying of the egg to the emerging of the queen may have a fine batch of queen-cells destroyed by a queen emerging inside of 15 days.

It appears quite plain that bees are not uniform in their performances, and it would be nothing strange that the next experiment should give different results.

I am quite strongly of the opinion that there is much more variation as to the time of sealing queen-cells than there is in the time of sealing worker-cells. I have been surprised sometimes, upon opening a sealed queen-cell, to find it occupied by so small a larva, and this with every thing in prosperous condition. The bees can afford to vary no little with queen-cells, while such variation with workers would be disastrous. As a rule the rations of the worker are carefully measured out, not an iota remaining unused; and if the larva should be sealed up a day or two before the usual time, the worker would be dwarfed if not starved. With a royal larva it is different. From first to last it has an excess of food, and if sealed up while quite small it has a sufficient supply to last.

Marengo, Ill., Jan. 12.

[This article, as will be seen by the date, was written about the first of the year; but I have held it till now so that the interesting conclusions can be verified or disproved in the apiary. I should like to have our readers, especially queen-breeders, go into the matter carefully; for in a practical way it involves the matter of choice queens, and that means honey.

What surprised me is that in one of the experiments conducted the bees should have apparently waited so long before starting the bulk of the cells; for Dr. Miller says that 16 fresh queen-cells were started on the 13th of July, just 8 days after the eggs were laid, or 5 days after the larvæ were hatched. We have heretofore assumed that larvæ just hatched, or larvæ not more than 3 days old, was the preferred age; but here is a case where the bees evidently had a preference for the five-day limit. Now, the question is, was this exceptional with this colony, or is it the common average? Now, friends, don't you see a great deal of importance attaches to this?—Ed.]

buy fifty hives of bees and increase them to two hundred in one season, and then depend on their giving me fifty pounds of surplus per hive. I have read several books on bees, and I thought if I could get, say, 10,000 pounds of surplus per year, I could make it pay."

"I have no doubt of it," I replied; "but the question is, whether you can get it."

"Oh! I don't intend to rely wholly on the bees, for I am going to keep pigeons, fancy pigeons, and other fancy poultry too."

"Ever kept any bees?"

"Well, no; but I have read all the books I could find, and know all about it."

"Ever read what they say about keeping pigeons and bees?"

He didn't remember.

"What are the honey resources over in your section of the State?" He didn't know.

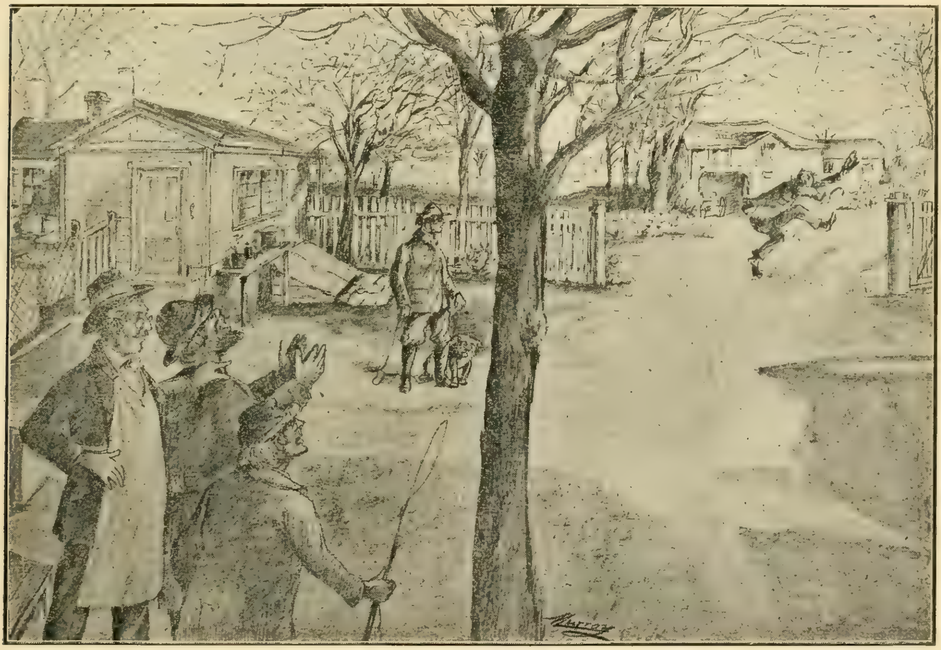
"Before you go in quite so extensively, don't you think it would be a good idea to look up some of these points?"

He didn't know but it would.

"I can tell you one thing," said Deacon Strong; "they have one source of honey over there of great value, and that is the striped or spotted maple. It comes early, and yields abundantly. It is not a tree like the soft or sugar maple, but rather a shrub from five to fifteen feet high, and blossoms abundantly and produces great quantities of honey. It is very conspicuous all along the roadsides, and adds much to the landscape with its masses of showy seeds in late summer and early autumn. The dogwood also yields honey abundantly, but is not very plentiful. Neither shrub gives honey of very good quality, however, but they are valuable for building up in spring."

"How about supplies? Doesn't it cost a small fortune to buy all the hives and sections and foundation you need?" inquired Mr. Henshaw.

"That depends," said I. "There is Mr. C———, of West Brimfield, who lives less than a hundred miles from you, and he manages a large apiary without paying out much. He cuts the timber for hives in the forest, and draws the logs to mill, and, when dry, cuts up the boards with a small foot-power circular saw, and makes the hives himself. He does the same for clamps and sections. He lets the bees fill their frames with combs while working on striped maple or goldenrod, so he has no heavy foundation to buy. I don't know whether he makes the nails he uses or not, but I should not be surprised to learn that he did, as I found he made almost every thing when I was visiting him."



"A DEFINITION OF STIMULANT."

"Some work, I guess, about keeping bees?" Mr. Henshaw observed.

"After you have tried it for a few years you will not need to guess in regard to it."

"Hello! Is that you, Deacon Strong?" shouted Jerry Benton, from the roadside. "I want to see you. Will the bees sting me if I go over where you are?"

"That will depend," said Deacon Strong. But he thought he would run his chances, and come into the yard.

"Oh! see those bees! Is that honey on their legs?" he inquired as soon as he saw the bees carrying in pollen.

"No. Don't you see it doesn't look like honey?"

"Oh, no! I see it is wax."

"No, it is not wax; it is pollen," said I.

"What do the bees do with pollen?" he inquired.

"Why, feed their young brood, of course."

"I tell you there is a good deal to learn about bees," said Jerry. "But I dropped in to see if you had not sort o' made up your mind to support our license candidate for the legislature."

"No," said the deacon, "not if my name is Zebadiah Strong."

"But," said Jerry, "haven't you heard of Prof. Atwater's experiments?"

"What experiments?" queried the deacon.

"Oh! he has proved that alcohol, when taken into the body, will burn, or give out heat, the same as other food. He put a man in a little glass house and weighed the air and food, and did every thing in the most scientific manner, and he has proved it's so, whatever temperance fanatics may say."

"We can burn alcohol outside of the body, and I presume," said the deacon, 'under some circumstances it may burn in a human body; but it is an old saying, and a true one, that you can not get something out of nothing. Now, we all know there are no nitrates in alcohol to repair the muscles or phosphates to build up the brain or bones, so that it can not be a true food."

"But doesn't a man feel stronger after he has taken a little whisky?" queried Jerry.

"I presume so," said Deacon Strong, "just as my horse feels stronger after I have given him a little whip. But you ought to see my horse Prince go after he gets one cut. I am not sure but there is a good deal of nutrition in a whip. And after all, there is not so much difference between a whip and whisky as there might seem at first thought. You will notice that the first—yes, the first three letters of both words, are the same. One makes the skin smart on the outside, and the other makes it smart in the inside. Both make the nerve centers give out energy that has been stored up for sickness or old age. No, sir; alcohol is not a food but a stimulant, pure and simple, or a poison."

"What is a stimulant?" Jerry asked, with about as much interest as, eighteen hundred years ago, Pilate asked, "What is truth?"

"It is most likely to be a poison," said Deacon Strong, "that acts on the nerve centers, and increases the circulation of blood and—"

But just then a bee from a hive that Jerry had carelessly sat down on stung him over one eye, and he jumped to his feet, and, swinging his arms, knocked his hat off, when another bee took him in his back, and another on one leg, and another on his nose, when, using language that was any thing but gentlemanly, he broke, and, hatless and wildly gesticulating, he ran down the street a living flesh-and-blood illustration of a stimulus.

"We would call that fellow, over our way, a regular cork-screw politician," said Mr. Henshaw.

"What is that?" I inquired.

"Why, the crookeder it is, the stronger the pull—see?"

"Lawful sakes alive! What ails that 'ere man down the street there?" exclaimed Will Simpson, from the roadside.

"He has been taking some stimulants," said Deacon Strong.

"How did he take them?" queried Will.

"With a hypodermic syringe, I should say," the deacon replied, while a comical expression came over his face, rather unusual for him.

"Great Gemima! How he runs! Got any more of that kind of stimulants over there?"

"Plenty," said the deacon.

"I guess I won't stop—got to be down to Gains' Mills by ten o'clock," and Simpson trudged on with his bull terrier at his heels.

CONVERSATIONS WITH
DOOLITTLE

MAKING LATE SWARMS PROFITABLE, ETC.

"Good afternoon, Mr. Doolittle. I thought I would drop over a little while to-day and have a talk with you about swarming. It is getting a little late for swarms now, but I have several colonies that I fear will swarm yet, and I wish to know if there is any other way of treating them than that usually adopted."

"Glad you called, Mr. Smith; and about treating swarms, it is the custom of many bee-keepers to hive new swarms on a new stand at all times of the year; and while this is often profitable in the early part of the season it is often ruinous, so far as a crop of surplus honey is concerned, where practiced the latter part of the honey harvest. As the season advances, a different plan is needed from that used during June, and after considerable study along this line I hit upon a plan which has worked to my complete satisfaction."

"Good! And now if you will give me the plan I shall be under much obligation to you."

"Never mind about the obligation to me. Whenever you have a good chance to benefit a fellow-mortal, always improve that chance, never thinking that you are under no obligations to any save those who have helped you. It is even well to try to benefit the unkind and unthankful, for the Father above sends the rain, sunlight, and dew on those who never think of thanking him, much less of being under obligations to him."

"Is that your plan of treating late swarms?"

"Well, not exactly; but I thought it no harm to give you a little truth as occasion presented. The plan is this: As soon as a swarm is seen issuing I take six frames filled with foundation, and two wide frames of sections, putting the same in a box or hive which is convenient to carry; and when I arrive at the hive from which the swarm is coming I take the frames from the box and place them down by the hive. As soon as the swarm has mostly ceased coming out the hive is opened, and all of the frames of brood and honey, with the adhering bees, taken out and placed in the box, after which the two wide frames of sections are placed, one at each side of the hive, and the six brood-frames put between them. The hive is now rearranged and closed."

"Will the bees stay on these combs all right in that open box? I should think they would fly out after the swarm."

"There is no trouble about the bees leaving the combs. If the weather is warm, and there are many bees on the frames, about a third of them are shaken off in front of the hive, when the box is placed in the shade a rod or two away, so the bees from the swarm will not find it when being hived, which is the next thing to do; hiving them in the rearranged hive on the old stand."

"Is there no danger of having too few bees on these combs should the weather be cold?"

"If the weather is cool, or but few bees are on the combs of brood, omit the shaking off, for it will want all of the bees to keep the brood in good condition."

"Yes, but what do you do with these combs of bees and brood?"

"That was what I was going to tell you next. They are taken to a hive which has been placed where I wish a colony to stand, and arranged in it the same as they were in the old hive; and after tucking them up all warm and nice they are left till the next morning. At any time during the forenoon of the next day they are given a virgin queen, or a queen-cell just ready to hatch, and in this way we have no trouble with after-swarming, for the bees feel so poor at this time that they are glad of any thing in the shape of a queen, the flying bees that were taken with the combs of brood having gone back to the old stand with the swarm."

"Must this giving of the queen be done at just such a time? Why not wait three or four days?"

"If the delay is longer than eighteen hours, this formed colony often becomes so strengthened by the rapidly hatching brood that they will destroy the queen-cell, or kill the virgin queen, and after-swarming will be the result."

"Would it not be well to give this formed colony a laying queen?"

"Do not give them a laying queen unless you wish a prime swarm from the colony in from eighteen days to three weeks, for the bees will surely use her for such swarming if the honey harvest continues for that length of time."

"What do you claim for this plan over the old one used by the many?"

"By this plan I get a powerful colony on the old stand, which will do as much as, if not more, in the sections, than they would if they had not swarmed; for a *new* swarm will work with a vigor rarely known to bees under any other circumstances."

"Do you do any thing further with the colony made from the combs of brood?"

"In ten days, if the honey harvest continues, sections are given to this colony, which has rapidly increased to such from the combs of brood carried in the box; and as the young queen has now commenced to lay, the bees will at once go into the sections, often giving a fair yield of honey; yet the main yield will come from the new swarm, as they have at least one-third more bees than they would had they been hived on a new stand, all of the field-bees returning to this place."

"Do the bees returning from the combs of brood and the fields catch the inspiration of the swarm?"

"Yes, they all work with a will together; and as the harvest is at its height also, and the brood-chamber contracted, the storing of honey goes on in the sections at a rapid pace, such colonies often giving from 50 to 100 pounds of 'fancy' honey to their keeper, while, if hived on the old plan, little save partly filled or empty sections would be the result."

"But will this new contracted swarm have stores enough for winter?"

"If the hive is left as we now have it till winter the bees are not liable to have sufficient stores; so when the harvest of white honey begins to draw to a close, the sections are taken from the sides, which were placed there at the time of hiving (if they have not been taken out filled before), and the combs necessary to fill out the hive are used to take their places. In this way the bees will fill these last for winter; and should a fall yield occur they will often have some extra stores to spare to help out any weak colony that may be short."

"What is done with the partly filled sections which may thus come from the sides?"

"These are taken from the wide frames and placed with those which are on top, when the bees will finish them, if the honey season does not drop off too suddenly; or they can be kept and used for 'bait' sections the following year."

"How are these best kept over so that they can be nice and clean, ready for use when wanted?"

"There are various ways, such as extracting the honey from them and then placing a lot over some strong colony for the bees to lick the remaining honey off, when they are stored away in a clean dry place till wanted. Or they can be uncapped and set over some colony short of stores till the honey is carried below. But I generally use the plan given by Dr. Miller, I think, of setting the whole lot in the cellar or some dark room, when on a pleasant day the door is opened, giving the bees of the apiary access to them, when, at night, I find them all cleaned up, with very few combs gnawed, provided we give the bees access to them at the right time, so that night comes at about the time the bees have the honey carried away. But I shall have to say 'good day' now, as I have to go to the out-apiary yet before night."

G. F. D., Texas.—Occasionally we find drones from a particular queen-mother having variously colored heads. They are quite a novelty, and yet we have reports of them every season.

HEADS OF GRAIN FROM DIFFERENT FIELDS

FLORIDA FLESH-EATING ANTS.

In reading on pages 432 and 433, June 1st issue, about ants, it occurs to me that probably you are not acquainted with our Florida ants. We have several kinds that are flesh-eating, and care but very little if any thing for sweets. The ants that destroy bees here are very large, and appear to prepare for battle as much as an army of men. They come in from the woods like an army, and make a stand in an old stump; or if they can not find a better place they take the A. I. Root closed gable cover for a stand. When they pitch battle they fight by killing and being killed until one or the other is extinct. A strong swarm of bees will kill a pint of ants, and probably lose two to three quarts of bees; but two quarts of these ants will conquer a large colony of bees in one night. I have had them drive every bee out of the hive, and find them clustered on the ground in the morning, and then again I have had them cut the wings of every bee in the hive so they could not fly. These ants will cross chalk, coal tar, or any thing I have tried except boiling hot water.

Vero, Fla., June 8. H. T. GIFFORD.

[Bisulphide of carbon would kill these ants, no matter if there were thousands of them in a nest. Put about two ounces of the drug in their stronghold, and if it does not make them "lay down" and stay "down" I shall be surprised. Try it.—ED.]

THREE SWARMING SEASONS IN THE YEAR.

There are three swarming seasons here—spring, summer, and fall—mostly in the spring. Spring swarms sometimes come off in March, but generally in April; summer swarms irregularly during June, July, and August; fall swarms, but not many, sometimes in November. In my experience, spring and fall (or early and late) swarms invariably cluster on the premises, if there is anything suitable for them to alight on; but summer swarms frequently leave without clustering.

Opelousas, La. J. W. JACKSON.

[You must have a good honey location to have not less than three swarming seasons. Most good localities afford only one swarming season in the year.—ED.]

WINTERING UNDER DOVETAILED-HIVE COVERS WITHOUT BEE-PASSAGEWAYS.

Editor Root:—Since I began using your Dovetailed hive I have found some fault with the cover, on the ground that it did not furnish adequate protection in cool weather. I always supposed that it was best to have an open bee-space over the frames; but the cover did not admit of using a quilt and still preserve one. But I think I have discovered that the open bee-space is not necessary. This spring, when I placed the bees on the summer stands, I protected all of them on top in one way or another. In a good many cases I cut pieces of carpet just to fit inside the hive over the frames; then, with the flat cover on, this arrangement entirely did away with the bee-space. I will remark, also, that my combs are all built from full sheets of foundation, and have no holes in them through which bees can pass. It might, therefore, seem advisable to have passageways over the frames. But the result shows that all those colonies on which the carpets were placed have built up very rapidly, and are among the strongest of my stock. This may be of interest to others who are using the same hive, or, perhaps, they all knew it before.

Bees wintered well in this locality. White clover looks well, so that we are expecting a profitable season. HARRY LATHROP.

Browntown, Wis., May 28.

[It has generally been set down in the text-books, and recognized by prominent bee-keepers, that to winter bees successfully one prime essential is a passageway, either through the combs or over the tops of them. It strikes me that your experience is a little bit exceptional. I wish you would try it another year, and see if the results are the same.—ED.]

A HONEY-EATING BEETLE; ITS GENERAL HABITS, ETC.

Dear Mr. Root:—I was very glad to get the communication from Mr. Mediseth, Ware, Ark. It contained something new, and I am always on the scent for new things in nature's glad realm. Mr. M. writes as follows: "I send you some bugs [they are beetles] which were very bad on my bees last year. The bees can do but little with them. I think that the only way they can kill them is to ball and smother them to death. They often do this. This insect eats both comb and honey."

This beetle proves to be *Euphoria sepulchralis*. It is a common species in the East. I have never heard of this habit before. I know, however, a very close relative that is very common in Michigan, and which has a habit that makes it easy to see why this little sober garbed beetle has taken to this new role, which shows clearly that he has a sugar-tooth, and that he appreciates one of the best sweets that God has given to the world. I refer to a large noisy beetle that often is mistaken for a bumble-bee as he sweeps by. This is *Euphoria inda*. It has the robust form of the family to which it belongs, the May or June beetle family. It is shorter than the common brown May-beetle, and so looks even more full-fed. It is yellowish brown, and is an attractive-looking beetle. The habit to which I refer is that of entering the richest peaches and pears, gouging out a place to enter, and fairly smacking its jaws as it feeds on the luscious pulp. This beetle often does no little damage, as it bores into the best and ripest fruit of the trees. I have known it to depredate on peaches, pears, and apples. One year I knew it to tunnel out countless funnel-shaped holes in some of the richest, most luscious fall pippins that mortal ever ate. This surely gives good evidence of its good taste.

It need hardly be said that a luscious Crawford, Bartlett, or pippin is almost as good as honey ; and if the other *Euphoria* will feast on the best fruit, why not this one on the best honey, which, I take it, is the kind that Mr. M. produces?

We are not surprised, either, that the beetles are safe against the bees except when they are balled to suffocation. As all know, the beetles, like all insects, wear their skeletons on the outside ; and this armor, for such it is, is very thick and tough, so that it is well nigh impenetrable. We are not surprised that the beetles are indifferent to stings. They are safely guarded, in their chitinous covers, from hurt, even against such javelins as the bees possess.

It is to be hoped that this habit will not become common enough to work any considerable harm. I hardly see how we could fence against this little intruder. I think he could go where a bee could, and so we could not bar him out except we shut out the bees as well. The beetles, unlike the most of their family, fly in the hot sunshine, and so we can take advantage of the night hour to keep them out. The beetles are half an inch long, a dark olive in color, and are specked above with dots or splashes of white.

These beetles were put in the letter, and so were smashed as flat as a pancake. Insects ought always to be sent in a strong box, and with a little cotton or soft paper, so that they can not rattle to their hurt. They can be sent for a cent postage, and then they come safely.

Claremont, Cal. A. J. COOK.

VIRGIN-QUEEN LOSS.

We notice that a large per cent of your virgin queens are or have been turning up missing. You think the probable cause is the king-bird. Undoubtedly it caught some of the queens, as they are very active during the early spring or breeding season. But say, friend R., I would be willing to wager you a cookey that, if the truth were known, the bees themselves killed nine queens for every one which was caught by the birds. Remember, I am not pleading for the birds—in fact, I shoot all I get a chance to. We think there are more bees killed by the bees themselves than are lost by the queens flying out and not returning. Next spring you examine the nuclei on a nice warm day along in the afternoon, about the time when the queens ought to be flying, and see what per cent of the virgin queens you will find balled. H. G. QUIRIN.

Parkertown, O., June 11.

[I will explain that friend Quirin is an extensive queen-breeder, having in operation something like 500 nuclei ; and it should be assumed, of course, that he knows what he is talking about.

Yes, friend Q., while we always expect a large loss of young queens in the spring of the year, yet last spring we were having a larger loss, and the fact that king-birds and other birds were quite in evidence at that time, led us to believe that they were responsible for the increase in loss. I do not know why the bees should ball their own queen, and the only one they have ; but when honey is not coming in, and it is a little chilly outside, bees, like human beings, feel like blaming somebody. Perhaps they think their young mother ought to lay.—ED.]

END-SPACING STAPLES IN THE ENDS OF THE TOP-BARS.

Tell Mrs. A. J. Barber, and all others who have trouble with your short top-bars in ill-made hives to drive the end-space staple in the top-bar on the lower edge instead of the end-bar. Years ago I ran an apiary of home-made hives on shares for a neighbor, and had a great deal of trouble with the frames dropping off the rabbet, but remedied it by driving nails in the top-bars. S. R. AHRENS.

Fayetteville, Ark.

[Your suggestion is a very good one, and will remedy the trouble with poorly made hives. But why should one purchase cheap hives when the very best cost but a trifle more? Cheap things are often very dear at any price.—ED.]

Please inform me why my young swarms, as they leave the parent hive, go direct to the woods. They do not alight and cluster.

Descanso, Cal. E. P. ST. JOHN.

[It is the rule, that all swarms alight shortly after leaving the hive ; yet there are many exceptions. Swarms will sometimes go directly from the hive in a bee-line for the woods. No reason can be assigned for it other than that the scouts have been out before, and, having learned the exact location of a hollow in a tree, they lead the bees directly to their new home. You speak as though all your swarms abscond in this way. I should hardly think that possible, although it would not be improbable that three or four might go off so.—ED.]

HOW TO CARRY SWARMS ON A BICYCLE.

That is a very pretty and useful method, no doubt, Mr. Editor, as detailed by you, but it isn't in it with the exploits of the bees of "Auld lang syne." I don't know just how "lang," but away back in the days of Tam O'Shanter bees were in the habit of carrying great loads of honey on bicycles. Don't believe it? Just listen to what the poet Burns has to say on the subject :

> As bees bizz out wis angry fyke,
> When plundering hordes assail their byke.

Bradford, N. Y. A. J. WRIGHT.

LOTS OF SECTION HONEY.

Bees have had a great time the past ten days —lots of section honey. But bees hereabout had a hard time from March to May 15. It was the worst spring I ever knew for bees. The cold winds caused the colonies to dwindle badly. All my colonies are in fine condition now, and solid full of honey and bees. I have all the orders for queens I can attend to, and queen-rearing is progressing finely.

Wenham, Mass., June 7. Henry Alley.

WHAT MAKES THE BEES SWARM AGAIN?

Please tell me what is the matter with my bees. I had a swarm the 6th of June, and after much trouble I succeeded in hiving it. I placed a frame of honey and brood in the hive. They went to work at once building comb, and had stored a little honey, when on the eighth day they swarmed again and left a cluster of bees on the front of the hive. All the time, though, the most of them were working. Please tell me through Gleanings what is wrong with them. J. I. Clark.

Vann, N. C., June 17.

[Without seeing the hive and the general surrounding conditions I should not be able to give a reason why the bees swarmed out; and, to be frank, I do not know that I could, even if I saw the hive out of which the bees swarmed. Bees will very often do strange things. To answer your question in a general way, a newly hived swarm is likely to leave the hive, without any apparent reason; but this liability is greatly increased if the hive stands out in the hot sun, and if the entrance is too small. A newly hived swarm should always have a wide deep entrance, and it has been our practice to raise the hive up on four blocks; or when that is not practicable, raise the cover. After they have quieted down, the cover may be set back on its place.

A great restrainer for swarming is a frame of unsealed larvæ. A comb of *capped* brood is not nearly as good as one having young larvæ, which the bees know, as a matter of course, they must take care of; for it gives them something to do at once.

Bees seem to regard swarming as an occasion for a gala time; and I have thought sometimes that, after they have been hived nicely, they come to the conclusion that they might have done better if they had gone further; and if they so reason, why, of course they will strike out for new quarters again.—Ed.]

BLEACHING COMB HONEY; FURTHER PARTICULARS REGARDING WHITE'S METHOD.

In your explanation of my article on bleaching comb honey you say your readers would like to know if I can whiten all kinds of stained combs. I have not had any comb honey so badly discolored as that described by Dr. Miller, in which dirt and slivers of wood were in the cappings. We have some badly stained combs in the last supers taken from the bees. The worst ones, however, were much improved by the bleaching process, and nearly all were rendered equal in appearance to those of the same grade that were not travel-stained. The proportion of soiled sections is, I think, much less here than with you, judging from what you say. The last good honey season, 1897, the proportion of discolored sections was not more than ten per cent in my honey crop. As you doubtless know, 1898 and '99 were failures, here, and the present season the crop will be very light, so far as surplus is concerned, in this immediate vicinity. In some localities in this country they claim to have a good prospect—in fact, have already extracted some honey. I learn that in places not 20 miles from us they had 4 inches more rain than we did here. We had only 8 inches from Jan. 1 until April 15. We had only ¼ inch of rain.

During this time the grain made but little growth—in fact, we had lost hope of having any grain or hay; however, late rains of 1¾ inches in all have given us sufficient hay, and promises to give our bees sufficient honey to carry them through, and, I hope, give a small surplus. If all my bees were leather-colored Italians we should be busy taking off full supers. Now we have only 3 colonies of them. They have extracting-tops on. They have filled top and bottom with brood and honey, while the best of blacks and hybrids have only commenced to work in the supers. Not one of these Italian swarms has been fed during the past two years, yet I bought honey and sugar and fed some 25 colonies of the blacks. In spite of all this I have lost 40 colonies, or half of my apiary. If I were able to get around I should try to raise some queens.

I believe one reason I have so few stained sections is because I leave the super on the hive until it is finished, putting the empty super on the top when the first one is about half filled. When I find the top one half filled I am quite sure the bottom one is finished; then I take it off, putting the top one on the hive, an empty one on it, then the bee-escape and the full super. I find the sections are filled sooner by leaving them next to the brood-nest until finished; yet, so far as I know, other honey-men here follow the plan described in the A B C of Bee Culture. A. E. White.

Pala, Cal., May 28.

[I did not think it possible for you to bleach the faces of those sections where the stain or propolis or dirt went *clear through* the cappings; but it is something to be able to bleach all other discolored combs.—Ed.]

DO DRONES SERVE ANY USEFUL PURPOSE OUTSIDE OF FERTILIZING QUEENS?

Is it proper in comb-honey raising to make war against all the drones, or is it essential to the well-being of the colony to have a certain number of drones in the hive? I have 100 colonies for comb honey, and I have trapped, and killed otherwise, all drones whenever I came across them, as I considered them worthless, and my neighbors raise enough to fertilize all the queens in the county. Some bee-keepers here claim that the bees work better if they have some drones in the hive.

Pomona, Cal. M. R. Kuehne.

[In producing comb or extracted honey it is not thought that the presence of drones in a colony is essential to their best efforts. Nature undoubtedly supplies the hive with male bees in the early spring, so that they will be in readiness when swarming takes place, and when there will be a surplus of young queens to be fertilized. If drones serve any other useful purpose in the economy of the hive, it is not known to the profession. But we do know this : That some say that a large number of drones unnecessarily incites swarming ; and why should it not?

I do not know that it is profitable to trap the drones just for the sake of killing them ; but I would consider it a good practice to see that all combs in the yard are exclusively worker. Sometimes foundation stretches in drawing out, and the cells are made oblong near the top-bar. All such combs should be used for extracting purposes, if used at all. Rather than let them get into the brood-nest I would melt out such combs, put in foundation again, and wire so it would not sag.—ED]

WHY BEES DO NOT START DOOLITTLE QUEEN-CUPS.

In raising queens per Doolittle plan, is it usual or not to have the colony refuse to start the cells unless they are first started by a queenless colony or by being made queenless themselves? I have prepared a colony according to directions ; but every time the bees removed larvæ they also removed larvæ and royal jelly when given that way ; also when transferred—baby, cradle, and all. The queen is a so-called hybrid, and was raised in 1899. I tried them a number of times, and finally made them queenless, and induced them to start about 40 per cent of cells given ; then I returned the queen to the lower story, and they are finishing up those cells nicely, but will not accept any new ones. I am at a loss to know how to proceed unless I use queenless colony right along for cell-starters, and this appears to be too much trouble ; besides, it makes a lot of dissatisfied bees which have to be returned and renewed frequently or they will not build well. W. R. L. DWYER.

[As you say nothing about feeding, I take it that you have omitted a very important essential in the matter of cell-starting. A normal colony with a queen out of the honey sea-will do nothing in the way of starting cells unless they are stimulated by feeding a little syrup daily. The best colony to start cells is one having a queen that it is trying to supersede ; and even this should be fed a little daily. We sometimes find it advisable, under some circumstances, to use queenless colonies for starting cells ; but even then we always advise that stimulative feeding, if no honey is coming, should always be practiced. Of course, during the honey-flow or during the swarming-time such feeding is entirely unnecessary.—ED.]

DAMPENING SECTIONS.

Your way of dampening sections is too slow for me. A much better way is to take an old tin can, hang it up, punch a small hole in the bottom, and take about 40 sections in your hands at once, and let the small stream run across the groove, and the work is complete.

Benson, W. Va. ABBOTT CLEMENS.

[I do not remember just what method we have given for dampening sections ; but it is our rule to pick up thirty or forty, as you speak of, and hold them in the left hand, edges up. We then take a tin cup filled with water, and pour a small stream right over the V cuts, drawing the cup along slowly as the stream runs down. This is very quickly done, and is quite effective. Another way is to lay the sections down flatwise on a table, V grooves up ; then with an ordinary sash-brush, dipped in water, paint along the V grooves. Your tin can filled with water would work nicely; but a tin cup does not require any special rigging, and is practically just as good.—ED.]

BEGINNERS QUESTION BOX BY E. R. ROOT

H. J., Kan.—Referring to what is said in the A B C book in regard to artificial swarming, I would state that nearly all the old bees will go back to the old stand ; but as a rule enough bees will stay with the brood in the nucleus to take care of it. It is now our practice to put the most of the bees with the nucleus on the *new* stand, because we assume that a large portion of them will go back. By proceeding thus we get an almost equal division of bees. But the nucleus on an old stand will have few young bees and nearly all old bees. The one on the new stand will have mostly young bees and brood. Yes, you can introduce a queen to either nucleus. We very often introduce the queen at the time of making the division ; but, of course, it is very necessary to make sure that the queen is not introduced to the nucleus that has the queen.

R. F. W., Ont., Can.—So you desire to change Quinby closed-end frames with hooks to Hoffman—or, rather, you want to know if I would recommend it. If your bees are on Quinby frames, and the propolis is very bad, I would advise you to keep them on such frames and not change to the Hoffman. I still admire the Quinby frame, and on many accounts like it better than any thing else I have ever seen ; but, like every thing else, it has its objections. When I came home some ten years ago I was enthused with self-spacing frames. I should have recommended the adoption of the Quinby instead of the Hoffman ; but the former could not be used in the ordinary hives that had formerly had Langstroth hanging frames, and it seemed to me, all things being considered, that the Hoffman would be the best one to adopt, because it was partly closed-end and because it could be used in the standard Langstroth hives that were and are used almost universally throughout the United States. But if the Quinby frame could have been used just as easily in such hives, you may be sure I should have recommended to our firm the adoption of those frames. No, sir ; to any one who has bees on Quinby frames, and who would contemplate changing them into the Hoffman, I would say, "Don't do it." Other things being equal, I should prefer the Quinby ; but, unfortunately, other things are not equal—that is to say, they can not be used in standard hives.

EDITORIAL
BY
E. R. ROOT

So far in our locality we have had of late a predominance of north winds, with an occasional shifting around to the south, followed by copious showers. But north winds generally forebode no good to the honey-producer.

IN the *American Bee-keeper*, Mr. Harry S. Howe, the young man who had "too much bicyle" in Cuba, and who is convalescing slowly, says that black brood is found even in Cuba. Mr. Howe made a special study of bacteriology while at Cornell, and while at the hospital in Cuba he has been availing himself of the privileges afforded by the laboratory of that institution, and while there diagnosed certain samples as black brood. It begins to look now as if black and foul brood were very near relatives—at least, where one is found the other is likely to be.

ANOTHER WAY OF FINDING A QUEEN IN DIFFICULT CASES.

ANENT finding queens, a correspondent suggests that in bad cases the colony be moved temporarily to another stand, and an empty hive be put in its place. In an hour or so the flying bees will have left the colony, taking the major part of the old bees. The decimated condition of the colony, together with the fact that the old bees are gone, makes it easy to find her majesty, he says. It strikes me that, to lift the old colony off its old stand, and tote it off a rod or two, would involve considerable labor. I would rather hunt for her, I think, in the good old fashioned way, a second time. I do not think I ever missed finding a queen at the "second hunt," especially if I call an assistant to help me scan the comb.

CUTTING RED CLOVER AT THE PEAK OF THE HONEY YIELD.

I CAN imagine how the Coloradoans feel when the ranchers begin to cut the alfalfa at the peak of its best nectar secretion. Yesterday while I was at our out-yard it was with considerable dismay that I saw a seventeen-acre red-clover field, bordering the lot of the bees, being cut by the farmer. The bees were fairly swarming on the blossoms; and as we had had no honey up to that time, and the colonies were almost on the verge of starvation, you can imagine how I felt. In two days' time the seventeen acres was cut, and there are dozens of other similar fields within bee range that are sharing the same fate.

White clover having failed us entirely we look to the basswoods, which will be out in a few days. But these do not promise much.

THE BEST SMOKER FUEL, AND HOW TO USE.

ALL things considered, I have come to the opinion that planer-shavings or handhole sawdust — a stringy kind of excelsior made by means of a wabbling saw—makes the best kind of smoker fuel — the most lasting and the densest smoke; but in order to get good results one must throw in but a very little of the shavings, light a match, and work the bellows until the fuel is reduced to live embers. Throw in some more, and treat them in the same way. It is then possible to cram in the planer-shavings, pushing them *down hard.* Next fill the nozzle, in the same way, snap it back into place, and we are ready for an hour or two hours' work. If the smoker is kept full there is no blowing of sparks into the hive.

This treatment is especially adapted to the Crane smoker, for it has a powerful direct blast. It may also be used for the Bingham and Corneil; but with either of these less cramming of the fuel is advisable.

CANKER WORMS ON THE BASSWOODS; ANOTHER PEST.

REFERRING to the canker worms mentioned editorially in our issue for June 15 I learn that Prof. W. J. Green, of the Ohio Experiment Station, Wooster, says that these pests will undoubtedly come back next summer; that, while the hard rains would dislodge the worms and interrupt them for the time being, he thinks spraying or poisoning will have to be resorted to in order to *destroy* them.

We are now finding in our locality another pest on the basswood-trees. At the base of the leaf-stalk on some trees there is a drop of whitish-colored mucus about the size of a bean. In this drop there will be enveloped one, two, or three tiny bugs, the bodies of which are not much larger than a common pinhead. The bugs are white, having a very prominent anal opening that seems to be almost telescopic, extending out like a miniature trunk. These pests attack the leaves of the trees. Some basswoods will have these "gobs" of mucus scattered all over the tree. We have written to Prof. Green for particulars as to what they are.

In addition to what Ernest has said above, I will add that I have seen this mucus on basswood-trees more or less ever since I have been interested in bee culture. At first I thought it might be honey-dew; but the bees and other insects never touched it so far as I could discover. It seems to be most prevalent during very dry weather. I did not know until Ernest called my attention to it that there was an insect inside of every mass of this stalk that looks like spittle scattered over the foliage. —A. I. R.]

THE GLOBE BEE-VEIL

SOME years ago, when I called on G. M. Doolittle we had occasion to talk about veils. We were in the shop, and I think he was picking out an extra veil for me, for we were about to look over some five-banders.

"Here," said Mr. Doolittle, picking up a globe veil, "is something I got from Mr. Newman. Of all the 'ornery' things, this is one of the worst, and I am surprised that Mr. Newman sells them; for usually, what one gets from him is up to date, and of the very best."

It struck me a good deal the same way. A year or so afterward, owing to ill health, Mr. Newman was obliged to sell out, and we bought his stock, including some two or three thousand globe bee-veils. But this stock of veils we felt disinclined to take, because we thought they would not sell, and, besides, we didn't believe they were as handy and as serviceable as the old kind. But Mr. Newman assured us, as did Mr. York, that this was one of the best-selling articles they ever had, and we finally took the lot. After cataloging it we were surprised to see how well it "took" with the general public. The demand has grown so enormously of late that I felt constrained to try one of the "ornery" things myself, and I was surprised to see how nice and convenient it was. Why, one can wear any kind of hat with it except a plug, and his face will be absolutely protected. Besides the convenience of wearing the every-day head gear that always feels comfortable, one has the added security, real as well as fancied, of having the veil held *clear away from the neck, face, and head* by means of the skeleton-like globe steel springs.

Yesterday at our out-yard, when two or three of the crossest bees made a dive for the back of my neck, I did not have the feeling that *perhaps* the veil was touching me at some spot where the rascals could get in a good jab. No, I had the satisfaction of knowing that those parts were invulnerable. At another time, when I received an onslaught from that hive of cross bees I wrote about, and which stand as guardians over the whole apiary against the intrusions of thieves, I had the pleasure of seeing (even though at close range) that my nose was a good big inch from the mesh of the veil.

While this veil is an "ornery" thing to look at, I must say that I have changed my notion about its general utility. I am not sure but if I were to work in the apiary day in and day out that I would use it exclusively; for one of the things I do like is to wear a hat I am used to. The ordinary cap will not support the average veil in a way that protects one properly, and I very often wear a cap, and with that the globe is just the thing.

EXPERIMENT STATIONS, AND THEIR ADVICE ON THE SUBJECT OF SPRAYING.

ON page 403 of our issue for May 15 I referred to the advice of one Wm. Stahl, a vender of spraying outfits, in which Mr. S., in the directions that go with his spraying-pumps, claims to have a "great secret;" and that secret (?) is to give the trees an "additional spraying" "when in full bloom," regardless of the interests of the bee-keeper, and directly contrary to the advice of the experiment stations.

Seeing which, the editor of the *Farmer's Guide*, published by the Guide Co., Huntington, Ind, took Mr. Stahl sharply to task. In reply, Mr. Stahl had the audacity to say that the editor of the *Guide* was "just a little bit behind the times;" see GLEANINGS, page 403. To make sure of the exact attitude of the experiment stations of the country, the *Guide* next addressed a circular letter to seven experiment stations. In this it referred to the advice of Mr. Stahl, and added, "If we are behind the times, we want to know it, and know the safe, sure, and good way to catch up." Replies were received from five different stations, and they are published in the *Farmer's Guide* for May 26. As these are all so valuable I have thought best to place them in full before our readers, and here they are:

> In reply to your inquiry of recent date concerning the spraying of fruit-trees when in full bloom, I will say that the comments of the editor upon the advice given by Mr. Stahl, in a recent number of *The Guide*, coincide with my experience and observation. In the first place, if the spraying is done to prevent the apple scab, no Paris green is necessary, and the application of the Bordeaux mixture should be made just as the leaf-buds are opening, or before the blossoms open. This has been clearly shown by Prof. Burrill, of the University of Illinois, whose ability along this line no one will question. Again, if the spraying is intended to prevent the ravages of the codling moth it would be impracticable, to say the least, to spray while the trees are in full bloom, as the moth does not begin her work until there is a prospect of something for her young to feed upon or until the young apples are formed. It is also a well recognized fact that bees and other insects are essential to a proper fertilization of the blossoms, and it has also been demonstrated, by myself and others, that many of these insects are killed by spraying with the arsenites when the trees are in full bloom. J. TROOP,
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> Horticulturist, Indiana Exp. Station, Lafayette, Ind.

> Some of the fruit-growers in this State hold very firmly to the opinion that much better results can be obtained, especiallly with apples, by spraying when the trees are in full bloom than by following the advice of experiment stations and spraying just before the blossoms open and just after the blossoms fall. There is a law in this State, enacted in the interests of the bee-keepers, which prohibits spraying trees with poison when in bloom. Some of the men who believe in spraying at blooming time declare that they would rather spray at that time and pay their fine than to comply with the requirements of the law. So far as I know there have been no tests conducted by experiment stations to show whether or not there is any advantage in spraying trees when they are in bloom. The experiment stations have persistently advised against spraying when the trees are in bloom. They have held the opinion that the diseases and injurious insects may be held under control effectually by spraying immediately before and immediately after blooming, whereas it has been shown that spraying trees when in full bloom kills the bees. It has also been shown that the brood in the hive may be killed by poison brought by the bees from sprayed trees. Since bees are killed in this way it is reasonable to believe that many insects which visit the trees when in bloom may also be likewise poisoned.
>
> Your correspondent says that in the grape growing section of Nauvoo, almost every acre will be sprayed in full bloom this year. Investigations which have been made at this station show that there are many varieties of grapes which are absolutely self-sterile. They can set fruit only as pollen is brought to them from other varieties. Some varieties of grapes are strongly self-fertile, and need no assistance from other varieties in setting fruit. Still other kinds are still more or less imperfectly self-fertile, and are benefited by cross-pollination. The results of this investigation are reported in bulletins 169 and 157 of the Geneva, N. Y., experiment station. Other investigators have shown that a similar condition exists among pears and plums, and it is probably true that some varieties of apples are imperfectly self-fertile, if not completely self-sterile. It is also established that insects assist in cross-pollination. Therefore the fruit-grower who persists in spraying trees when in bloom may not only kill bees and thus destroy the property of bee-keepers, but he may also injure himself by destroying insects which assist in cross-pollinating the flowers.
>
> At the request of some of the fruit-growers the last legislature amended the New York law so as to permit orchards to be sprayed when in blossom, under

the direction of the experiment stations at Geneva and at Ithaca, for the purpose of investigating the subject as to whether or not there is any advantage to the fruit grower in spraying trees when in bloom. Both of the stations referred to are planning experiments in this line the coming season.

S. A. BEACH,
Horticulturist, Exp. Station, Geneva, N. Y.

I believe it is the consensus of opinion among experiment station men as well as the majority of practical growers who practice spraying that it is not advisable to spray while the fruit-trees are in bloom. Our experience in spraying at this station, covering a period of nearly ten years, indicates that insect and fungous pests that are controllable by spraying may be as successfully dealt with by spraying just before and just after the blossoming period as by spraying while the blossoms are on. This tallies with the opinions gleaned from the work of other stations. For this reason it seems unnecessary to risk spraying during the blossoming period

The dangers of spraying during the blossoming period lie in the possibility of injuring the bees and also the tender essential organs of the flowers. Observations by the writer upon trees sprayed while in bloom failed to determine just what injury may have been done to bees, and did not reveal any indication of injury to the flowers It is also fair to state that I have read no account which has settled this question of just how much injury may be done in this way. Spraying during the blossoming period is certainly not at all a new idea, for it has been tried by many, is still advocated by a few, and seems to be advised against by the majority.

J. C. WHITTEN,
Horticulturist, Exp. Station, Columbia, Mo.

I am aware that a sentiment exists that spraying fruit-trees while in bloom is more beneficial than spraying at other times, but I do not think there is any ground whatever for such belief. There does not appear to be any reason why spraying a few days earlier or a few days later would not answer just as well, and there is good reason why the trees should not be sprayed while in bloom. I regard such advice as Mr Stahl has given as very harmful. We can not dispense with the services of the bees in fruit culture; besides, we have no right to kill the bees, especially as no good will come of it. I have practiced spraying fruit trees for a number of years, and am satisfied that all the good results which the advocates of spraying in time of bloom claim will be secured by spraying just before or just after. I am quite sure that the advice which you will get from other experiment stations will be precisely the same, for it has been demonstrated that spraying when trees are in bloom is very harmful to the bees, and it has also been demonstrated that we can secure good results by spraying at some other time.

W. J. GREEN,
Horticulturist, Exp. Sta., Wooster, Ohio.

It is probably true that some varieties of fruit are sufficiently pollinated without the aid of bees, but the evidences of the necessity for their co-operation in many kinds of fruit-growing are, to my mind, unimpeachable. The entomologist of this station, Prof. H. Garman, has himself observed a bee sucking up the poisonous fluid that had been sprayed upon a tree.

In view of the fact that most fruits can be effectually and apparently just as well protected from insect and fungous pests by spraying at other times than the blossoming period, it would seem to be the part of wisdom to safeguard so far as possible the lives of these industrious allies of the farmer and fruit-grower.

C W. MATHEWS,
Horticulturist, Ky. Exp. Sta., Lexington, Ky.

The very fact that all the other experiment stations have spoken in the same emphatic way ought to settle the matter; but it appears that the station at Geneva, N. Y., proposed to go to the bottom of the matter, and we shall wait with pleasure the results of their experiments.

The *Farmer's Guide* is to be commended for the firm stand it has taken for truth and for the bees, and such action comes with all the more force because it is not a bee-paper. Bee-keepers should write the editor expressing their hearty approbation and inclosing an order for subscription. A good paper like the *Guide* should receive encouragement.

SPRAYING DURING FRUIT-BLOOM.

IN the *Country Gentleman* for June 7, page 470, appears the following from the New York State Entomologist, E. P. Felt, entitled "Bees and Spraying—a Warning."

The Albany *Argus* of May 22 contained a brief account to the effect that many honey-bees had been killed at Medusa, N. Y., by visiting trees sprayed while in full bloom with an arsenical poison. It was stated that one bee-keeper lost his entire apiary of 100 hives, valued at $500. The report was investigated, with the following results:

Several men sprayed their fruit-trees on Friday and Saturday, May 18 and 19, the former being a bright day. Trouble was first observed on the 20th Of the condition of his apiary on that day, Mr. W. P. Makely writes:

"The sight that met my eyes was enough to paralyze any bee-man. In front of each hive lay the full working force of the bees. Some in clusters apparently dormant, and others wiggling about as if in great agony. With the appearance of the sun there was a general movement among the bees in an effort to get as far away from the hive as possible. Those that had the strength would try to fly, but could only succeed in making three or four feet before they would drop to the ground. The next day, Monday, the 21st, I opened a few hives and found all the workers gone, and a large amount of brood and but few young bees left. I think that most of the colonies will pull through, but our honey crop is gone and we can expect no swarm."

Mr Makely estimates that practically all the field-workers were lost. Mr. Edwin Snyder claims to have lost between 80 and 95 per cent of his workers in his 90 to 100 colonies. Mr. Aaron Jennings has from 200 to 225 colonies, and the first serious consequences were observed on the 23d, when in the vicinity of more than half his hives he could scoop up handfuls of dead or dying bees. Orchards were sprayed on the 21st and 22d 1½ miles north and the same distance northwest of this man's place. A large quantity of dead bees have been received at my office, and they will be analyzed for the presence of arsenic. The destruction was fearful, and there is every reason to think that it was due to poison thrown upon trees in blossom. There is at present a law prohibiting the spraying of trees while in bloom; and this deplorable experience certainly indicates the wisdom of its remaining on our books and being enforced to the letter. There is a strong sentiment in some sections of the State in favor of spraying trees while in bloom, but practically every economic entomologist contends that all insects can be controlled just as effectually by spraying just before or after blooming, and in many cases the result is much better. It has been demonstrated beyond all question by experimental methods that honey-bees can be poisoned by visiting sprayed blossoms; but this is the first case known to me where widespread destruction has resulted under strictly natural conditions, most probably as a result of spraying. This case will be closely watched.

E P. FELT,
N. Y. State Entomologist.

If there ever was a provoking case this appears to be the one; and it seems to me the New York State Association of Bee-keepers' Societies should take a hand in it. Those who have been guilty of violating the law should be taught a lesson. If the bee-keepers of New York allow this to pass there will be other violations of a like nature; and the only thing is to make an example of these men to prevent others from doing likewise next spring.

HO FOR THE NEXT CONVENTION OF THE NATIONAL BEE-KEEPERS' ASSOCIATION!

THE following announcement, just received from the Secretary, will be self-explanatory:

Mr. Editor:—Please allow me to remind your readers that the next convention of the National Bee-keepers' Association will be held in Chicago, Ill., during the G. A. R. encampment in the last week in August next, the first session to be held on Tuesday evening, the 28th, and three sessions on Wednesday and three on Thursday, the 29th and 30th.

The convention will be held in Wellington Hall, No. 70 North Clark Street, about a block and a half from the office of the *American Bee Journal*, and about five blocks directly north of the court-house. The hotel at which delegates may secure lodging, etc., is the Revere House, only half a block from the hall. The rates for lodging will be 50 cts. per night, and the proprietor has assured Mr York that good beds will be provided, but that several will have to occupy the same room. For (most) bee-keepers, such an arrangement is an "added attraction." It may be possible that this hotel will not be able to lodge all the bee-keepers; but its proprietor will do his best to see that it does. Each one should secure a lodging place as soon as possible after arriving in the city. Enough to eat can usually be obtained at reasonable rates.

It has just occurred to me that our friend, the editor of the *American Bee Journal*, George W. York, 118 Michigan St., would be glad to do any delegate the favor of securing a lodging-place for him or her if so requested. Of course, no bee-keeper will omit to inclose one or two "stamps for reply." I have not consulted with Bro. York about this, and may be "putting my foot" into trouble; but if the two stamps are inclosed I'll be ready to take the consequences. All who write to Mr. York should do so *at least a month* before the convention.

The program will probably consist of a paper at each session, and the remainder of the time will be occupied in asking, answering, and discussing questions. The papers will be by such practical apiarists as Dr. Howard, of Texas; R. C. Aikin, of Colorado; Mrs. Acklin, of Minnesota; Thos. W. Cowan, of London, Eng.; Herman F. Moore, of Illinois; and S. A. Niver, of New York; and the question-box will be in charge of such veterans as C. P. Dadant. Dr. Miller, and Geo. W. York, of Illinois; Hon. R. L. Taylor, of Michigan; Rev. E. T. Abbott, of Missouri, and O. O. Poppleton, of Florida.

I have been unable, as yet, to learn what railroad rates will be during the G. A. R. week, but presume they will be the usual low rates, which may be learned by inquiring of any station agent as soon as they get their instructions. A. B. MASON, Sec.

I have personally seen the hotel and the rooms that have been engaged for the occasion. Considering the fact that the city will be especially crowded, I think Mr. York has done exceedingly well in securing for us the quarters he has.

THE HONEY PROSPECTS UP TO JUNE 28.

SINCE our call for reports of the honey crop in our last issue we have received several hundred, by which it appears that white clover is rather later than usual, and when these reports were made it was a little too early to tell definitely what the crop would be from this source. South of the Ohio River and east of the Mississippi there is promise of an average crop from various sources. Connecticut, New York, Indiana, Ohio, Illinois, Missouri, Iowa, Minnesota, and Wisconsin give very little promise of much clover honey, and not much encouragement for basswood. We have exceptionally fine reports from all localities in Michigan. Pennsylvania and Vermont also give promise of a fair crop. Two reports just received from reliable sources in Ohio and New York say the prospects just now are much better than they were two weeks ago. We are almost without information in regard to the West, although we have very favorable reports from Kansas, Colorado, and Nevada.

Here at Medina we have had very favorable weather since June 21; but up to that date our bees were almost without stores sufficient for brood-rearing. Now they are storing rapidly, and frequent showers give promise of a continuous flow from clover. Last year Missouri had an abundant crop of white clover, but it appears to be in the doubtful list this year. A. N. Draper, of Upper Alton, Ill., reported a big flow from clover over two weeks ago, but much of it was likely to be spoiled by honey-dews when he last reported.

MARKETING HONEY.

WHILE it appears at present that there will not be a large crop of honey in the East, we can not tell yet what the total crop will be, so bee-keepers should be careful in marketing—in other words, use good judgment. One extensive producer, and honey-merchant as well, says, "Honey can get too high. This was the cause of so much adulteration last winter." While honey was bringing a very good price all last fall and early winter, some held for still higher prices, and have been obliged to sell recently for *lower* prices instead. Honey has a limit; and above that, no matter how scarce it is, it will not be consumed. We do not feel like advising our readers generally, but at present we would advise selling any time your honey is ready, if you can get a reasonably good price. Work your home market for all it is worth. Do not spoil the sale of fine honey by lack of care in preparing it for market. You have spent time and money in producing it, and it will pay you to make it as attractive as possible to the consumer.

DIAGNOSING PICKLED AND BLACK BROOD, AND WHAT IT IS WORTH.

I NEVER have any difficulty in diagnosing a sample of real *foul* brood. The symptoms of that disease are so marked that it is very easy for one who is at all acquainted with its characteristics to determine whether or not it is a case of *Bacillus alvei* (foul brood); but to decide between a case of black and pickled brood is not so easy, for the two look very much alike, and under some conditions they *are* alike so far as external appearances are concerned. Knowing that a good many bee-keepers had sent samples of diseased brood to Dr. Howard, I felt that we could hardly ask him to make such diagnoses without compensation, for he is not in any way connected with an experiment station or any government work; and a man of his attainments as a bacteriologist ought not to be asked to perform a difficult service of this kind, requiring years of preparation and study, for nothing As yet I know of no one in this country who has been able to discriminate between one and the other absolutely. Black brood, as we know, is decidedly contagious—perhaps more so than foul brood, and quite as destructive. Pickled brood is a mild form of disease; but so far as I know it is not very destructive. Very often it will disappear of itself, and in any event a mild treatment will eradicate it entirely.

We will suppose that a bee-keeper discovers something in one of his colonies that looks suspicious to say the least. If he can know absolutely, by sending a sample to some competent expert, that he has neither black brood nor foul brood, this knowledge may be worth to him hundreds and possibly thousands of dollars.

Very recently a queen-breeder who has some 500 nuclei, and who is carrying on the business of queen-rearing very extensively, sent a sample of diseased brood, desiring us to wire him at once what it was. The sample came duly to hand, and I immediately wired back, "Not foul brood—possibly black or pickled brood." At the time of sending a sample to me he sent one to Dr. Howard also, and the latter very promptly wired him that it was nothing worse than pickled brood. This information was worth to him hundreds of dollars; otherwise he would have withdrawn his advertising, broken up his nuclei, practically throwing away a splendid trade in queens, at the same time ruining his business perhaps for all time to come. He had only one case in his yard, and that was promptly disposed of.

While we at Medina are perfectly willing to perform such services so far as we are able, because we have a journal and bee-keepers' supplies to sell, Dr. Howard can not afford to do them for the mere love of the pursuit. I wrote him, asking him what it would be worth to diagnose diseased samples of brood, and he replied that he thought he could afford to do it for $2.00; and this I regard as very reasonable, considering that he may have to spend hours with the microscope; so I would suggest that doubtful samples be sent to Dr. W. R. Howard, Fort Worth, Texas (but until the 12th of July he will be at 3200 Locust St., St. Louis) with a letter of explanation, and don't forget to send the money.

In a letter recently received from Dr. Howard, he gives specific directions by which every bee-keeper can diagnose to some extent for himself. Of the three particular brood diseases he gives the following diagnostic signs:

FOUL BROOD.

Glue-like consistence of the mass, and the offensive smell.

BLACK BROOD.

Jelly-like consistence of the mass, the absence of ropiness noticed in foul brood, and the peculiar sour-like smell.

PICKLED BROOD.

Always watery, turning black after being attacked with the mucor fungus—a black mold—and by placing the larvæ in a sterilized chamber, keeping warm and dark, in three or four days the white fungus of pickled brood appears. I nearly always place a few larvæ of every specimen of all kinds of dead brood. Foul brood and black brood are attacked with a fungus, though kept for months. WM. R. HOWARD.

THE CARLOADS OF HONEY THAT ANNUALLY GO TO WASTE IN RED-CLOVER FIELDS FOR THE WANT OF BEES WITH LONG TONGUES TO GATHER IT; BREEDING BEES WITH LONG TONGUES; $25.00 AND $10.00 PRIZES OFFERED FOR LONG-TONGUED BEES.

Two or three days ago, after making a visit to our out-yard I made a run on the wheel around through the adjoining section of country to determine what the bees were at work on, as I saw they were flying vigorously from the yard in all directions. There was a red-clover field of 17 acres that was being cut. At the time of my last visit there were only about four or five acres left, but bees were working just the same. I concluded there must either be more fields of red clover or that the bees were working on something else. Sure enough, within a quarter or half a mile I found several fields, making in all something like twenty acres, I should judge, of common red clover. In these fields were also scattering heads of white clover. Throughout the fields the bees were busily flying at work. They would first visit the white heads; and if there was nothing left in them they would next take the big red ones. By the way they hovered on the large clovers, alighting on them and then quickly leaving them, I came to the conclusion that they were not getting much from them. I accordingly watched several bees. First there came an Italian. It alighted on a head of red clover, and I carefully marked with my eye the flowerets or cells into which it ran its tongue. After the bee had left the head I pulled the same flowerets from the head the bee sucked from, and then with my thumbnail and fore finger I squeezed up toward the ends, and out of the base of each floweret I forced a very small drop of nectar. I positively *knew* that the bee had gotten all the sweetness out of these flowerets it could. Whether it got *any at all* I could not say—probably not. But this one head of clover that I examined, and which the bee evidently left in disgust, contained enough nectar to have filled at least three bees. I squeezed out of all the flowerets of this head of clover a very large drop. I then applied it to my tongue and secured a good big morsel of sweetness. Probably other bees had visited this head. I *know* at least *one* did, and I am equally positive that this one bee extracted all the nectar within its reach from several of the flowerets of the heads. But even then the bee left enough to have staggered it and two or three more.

A great deal has been said in regard to the possibilities in the way of breeding bees with longer tongues; and when Dr. Miller, a year or so ago, talked about a glossometer—an instrument for measuring bees' tongues—I rather ridiculed him. But the one observation from the red-clover field, as above given, convinced me that common worker-bees probably do not get more *than a tenth of the honey actually in the red-clover heads. If* the bees could get *all* the honey, I doubt whether the basswood-tree or any other honey-plant in existence could anywhere near approach it in the supply of nectar.

There is not a bee-keeper but has observed the large amount of nectar that can be pressed out of the flower-cells of the big red-clover heads; and I suggest that some of our bee-keeping friends try the same experiment I did—watch a bee; and after it has got all the nectar it can from certain flower-cells, pull off these same cells and see how much nectar is still left.

If white clover is going to be so uncertain in the future, it seems to be morally certain that bee-keepers must move into basswood regions or else develop bees with longer tongues. If it were possible to breed workers with tongues long enough to reach clear to the bottom of the red-clover cells, we might get tons of honey where we now get only hundreds of pounds. Then artificial pasturage in the Eastern States would reach a degree of importance that it never has yet, and never could have otherwise. It is a difficult undertaking to induce farmers to grow alsike clover in preference to the red, notwithstanding the former makes better hay. The farmer looks for *quantity*, and there can be no question but red and peavine clover do yield more hay to the acre than alsike.

As Grover Cleveland said, "we are confronted with a condition and not a theory." That condition is that farmers will grow red clover in preference to alsike. The only way to meet the condition is to breed bees with long tongues. That there is a great difference of bees in this respect has been proven over and over again.

No concentrated effort has thus far been made on the part of queen-breeders in general to breed long-tongued bees. J. P. Moore, of Morgan, Ky., has for years offered to his customers what is known as his "red-clover strain," and I have seen good reports of the performances of these bees. Years ago we had what we called our red-clover queen. Her colony during the red-clover season, and during the time when all others were robbing, would literally pack her hive full of honey. The reason was, they had long tongues, and could get the honey. We sent one of her daughters to Doolittle, and he pronounced the stock something remarkable. At the time we had her we did not realize her value; but to-day, if we could duplicate her we would give $500 for her, because we doubt if her like has ever been known before.

Now, then, if we can get queens with long tongues we can, to a certain extent, control our honey seasons. Suppose, for instance, we have long-tongued bees, we could well afford to furnish all our farmer neighbors within a mile and a half of us all their red-clover seed free. Yes, we could afford to pay them a little bonus, for the sake of getting them to grow a clover rather than a hay crop. Twenty-five or fifty acres of red clover within the range of bees having *long tongues* would show some wonderful results in the way of big honey-yields.

Now, Dr. Miller, trot out your glossometer and your long-tongued bees; and to prove our faith by our works we will pay $25.00 to the bee-keeper or queen-breeder who can produce the longest-tongued bees this season; and $10.00 to the one who can furnish the next longest. Contest to close by the 1st of October.

As yet I have said nothing about *Apis dorsata*. In the first place, their tongues are but little longer than the tongues of ordinary Italians, and no longer, if measurements already recorded are correct, than the tongues of red-clover bees. As *Apis dorsata* probably could not be domesticated—that is, work and be handled in ordinary hives, I think we must look to the species *Apis mellifica*, our common worker-bee.

OUR HOMES,

BY A. I. ROOT.

Blessed are they which do hunger and thirst after righteousness, for they shall be filled.—MATT. 5:6.

Suffer little children, and forbid them not, to come unto me, for of such is the kingdom of heaven.—MATT. 19:14.

I suppose our readers have all read, or at least nearly all, Sheldon's book, "In His Steps;" for probably no other book since Uncle Tom's Cabin has made such a stir in the world, and has been read so universally. If you have not read it, get it at once, let the children read it, and lend it to the neighbors. When it is worn out and lost, get another and keep it going. Of course, the book is not perfect. Sheldon would not be human if his book were without faults. But never mind the faults. Consider the good things in it. When I first read it I remarked to Mrs. Root, "This writer has undertaken a tremendous task. His conception is a wonderful one; but, as I suspected from the start, he is not equal to the task, and, for that matter, no living human being, nor any that ever has lived, is really able to say what Jesus would do in all emergencies." Notwithstanding, Sheldon has done a wonderful thing for humanity; for not only has the book attracted the attention of the whole wide world, but a great part of this *wicked* world has been trying to put its teachings into practice. We may err just as Sheldon did in our crude conceptions of what Jesus would do; but I am sure the dear Savior is pleased, even with our bungling efforts in trying to follow "in his footsteps." May the Lord be praised, he has not only promised to guide those who are hungering and thirsting after righteousness, as we have it in our text, but he is guiding us.

One of our religious papers has seen fit to take exceptions to the way in which the expression "What would Jesus do?" has been brought into common every-day use; and they objected because it was dragging down a sacred name in an irreverent and almost blasphemous way. One of the instances they mentioned was that different tradesmen, in their advertisements, declare they would treat their customers "as Jesus would do," and they went on to say that even a *barber* had put up a sign saying customers would be shaved just as Jesus would do it. Now, I think the religious editors are wrong. I am glad to know that the grocer and the barber had found out that there was a strife among business men to be fair and right. After some of the experiences I have had with barbers, I should be very glad indeed to find *one* who is even *trying* to conduct his business as Jesus would have him do it; and when this spirit gets among the small matters of daily life, you may be sure it will ultimately get among the great ones.

Last week I felt like taking a wheelride. Mrs. Root and the rest of them declared it was out of the question so short a time after our big rain; but I have had more experience in such matters than any of them. Fifteen or twenty miles south of us the land is sandy and gravelly; so I took the train to a point nearest where I wanted to go. They told me at the ticket-office that this particular train did not stop at Easton, and that I would have to go four miles beyond. I have learned, however, that sometimes unexpected chances favor us; so I asked the conductor if it was possible for him to let me off at Easton or near there.

"Why, yes, although it is contrary to our usual custom. To-day we have a special matter that will cause us to stop at Easton. You can get off as well as not."

I told him I had paid my fare to Warwick, four or five miles beyond. He did not offer to return what I had overpaid, and did not make any suggestion as to how I could get it back. He simply stated I could get off at Easton just as well if I wanted to. But I should like to see even railroad companies as anxious to refund, when the matter is clearly their own mistake, as they are to get a few cents more when it comes the other way. May be it would be expecting too much of a railroad company to undertake to do business as Jesus would do it; but I have faith to believe the time will come when we shall see something of the kind. I got off at the station, and started off on a road that was comparatively new to me. I was obliged to make some inquiries of people I met. By the way, when I am out wheelriding through the country I make it a point to speak to everybody I pass—that is, when I can do so without hindering them. I like to talk with boys and girls; I like to compliment people on their nice gardens and on the beautiful flowers in their dooryards. And, by the way, I never enjoyed flowers before in my life as I do this summer. *Some* people may think me a little queer, it is true, because I have a salutation for every one. But I can not help it if they do. If Jesus were traveling through our beautiful State of Ohio he would speak to people right and left—certainly to every child he met. When I was in Bermuda I noticed friend Morrison seemed a little surprised that I was in the habit of saying "good morning," not only to the schoolchildren, the colored men and women, but even to the high-toned folks who came to Bermuda to spend the winter. I finally spoke to him about it, and he said no doubt some of the rich people would think I was taking a liberty; but to one who loves his fellow-man (as Jesus did, and *does* even *now*) it seems almost as if one could not well pass a human being, especially out in the country, without some sort of recognition. Of course, a nod is many times all that is necessary; but when I am wheeling I can slow up, without any trouble, enough to recognize the one I meet, and to say something, and get some sort of reply. Where people are out on the street or near the gate it is an easy matter to speak about their pretty homes; and most of the homes through our State of Ohio have something attractive about them. With the recent newspaper accounts of outrages, women, when away off alone on the road, are often a little timid about passing a man on a bicycle; but a pleasant "good evening" oftentimes reassures them, and brings a pleasant recognition in return. Where the path is narrow I am also very particular that no woman shall step out of the path in order to let me by. I frequently ask them to keep in the path, and I will get around some way. I mention this to suggest to riders, old and young, that it is not out of place to consider "what would Jesus do," even when you are riding the wheel.

My first stop was at the pretty home of Mr. Christian Weckesser, near Marshallville, Wayne Co., O. Friend W. has recently located in a pretty ravine on his father's farm, near a little spring. He has even his greenhouse and hot-beds placed down under the trees. When I suggested so much shade was an objection, he said there was no shade till the trees leave out; and after they leave out, the shade was just what he wanted. He does not have to whitewash the glass nor put up curtains as we do. Away up on the summit of the great hills (that are seen through a large part of Wayne Co.) he is growing beautiful crops; and as most of his ground is away up above the valleys he has literally a "tiptop" (?) location for growing all kinds of fruit. His family of five little ones have a grand place to play on the steep side of the canyon, as I should call it, and they can play in the soft spring water if they feel so inclined, during the hottest day in summer.

As I wanted to make the experiment station at Wooster before night, my call was a brief one. As Mr. Weckesser is not on a main road I started off across the lots on my wheel. Pretty soon I met his oldest girl coming from school. The father told me she had taken a great interest in getting an education. I said, as I met her, "I don't think you know me, my little friend, do you?"

"Yes, I do, Mr. Root," she replied, as she looked up at me a little shyly, but yet with a most winning smile. I remembered meeting the children on a former visit, but I should not have known this one. I have told you of late how a glimpse of a beautiful flower often gives me thrills like sweet music; yes, and I think I have often told you that the faces of the boys and girls frequently stir me much in the same way. At the time I mention I had had an exhilarating wheelride over those grand hills. I had a pleasant talk with the father and mother about their home, their children, the flowers, and the crops, and my heart was warm with love to God and to all my fellow-men. The father had told me about this child's special desire to get an education. His own sister was her teacher. She was prettily attired, as school-children usually are, and her bright face gave me a thrill of joy. It brought to mind vividly what Jesus said of little children, especially the closing part of the text I have chosen—"for of such is the kingdom of heaven." There are thousands of such little girls scattered all over our State. They are often out on their way to school, or on other errands, sometimes off across the lots, and unprotected; and I believe that, as a rule, most men, or at least anybody who has any sort of right to be called a man, would give his life in a minute to protect and defend a little girl, yet (God knows I hate to say it) these very little girls—yes, even in Ohio—have in recent times been assailed by wretches in human form when no one was near to protect them. If for no other reason in the world I would banish saloons from our land, to protect these children from human fiends or drunken fathers. Yes, drunken fathers have struck down innocent children like this one when they had committed no fault at all, and just because the father had permitted the Devil to take possession of him. The thought of that pure bright childish face has followed me, and follows me still. It is only a type of thousands like it in our land, needing the protection, not only of the mothers, but of all good men. These children are as pure as the sunlight. They are soon to grow up and bear the burdens and cares common to motherhood. Shall they be struck down and trampled under foot when they are doing the very best they know how? when they are giving all their feeble strength and last drop of blood to *defend* the home and children? Shall these mothers be persecuted and brought down to an untimely grave just to enable *brewers* and *liquor-sellers* to make money out of their horrible business?

I expected to make Wooster before sundown. When I reached Smithville the sun was not very high, and I was somewhat tired of riding over the hills. I passed a pretty little church, and dozens of boys and girls neatly clad were passing in and out. One of the children told me the occasion of it was they were going to practice that evening for children's day. As I looked over the groups, differently dressed, and with different expressions on their faces, it made me think of the flowers once more.

I decided to stay at the hotel over night. As it was past the time for my afternoon nap I planned to take my sleep first and then attend the children's rehearsal, for they told me visitors were admitted. I was shown to a very dainty pretty bedroom. It was not expensively fixed up, but every thing was neat and clean. I told the landlord I had been to supper, and simply wished to pay for lodging, as I wanted to resume my journey by daybreak. When he said it would be only 25 cents, I ventured to tell him that was not enough for such a nice clean room But he smiled as he said that was the regular price, and that he preferred not to take any more. I told him I would remember him when I came that way again.

By the way, friends, did you ever think of the comforts that are scattered all over our land? Here am I, a stranger, away from home. For this small sum this room is mine for 24 hours if I wanted it so long. I can do just what I please with it as much as if I owned it. I thought of this as I pushed the sash up to the top of the window, and parted the curtains so the breeze could get in a little more freely and out of the open door. That children's-day gathering made me feel nobody in *that* town would try to steal any thing while I was asleep, even if the doors and windows were *all* wide open. Then I wheeled the bed so my face was right before the open window; and, oh what a delicious sleep I had while the cool breeze coursed freely over my tired self! Of course, I had a good wash before lying down, with pure soft water out of a clean pitcher, and a nice clean soft towel. Oh, yes! I know we do not always find *every* thing like this at every country hotel; but at this time I not only thanked the landlord, but I thanked God for these things that add so much to our comfort and enjoyment.

When I awoke, the sun was down and it was dark. I wanted a drink of hot water, as I always do after a wheelride. Now, if I troubled the people at the hotel to get it for me it would make them quite a little trouble, and they would not take any pay for it either. I knew by former experience. So I went out into the street and walked down toward the little church. Pretty soon I saw a bakery with "Hot Coffee" on the sign over the door. I asked the woman in charge if she could give me a cup of weak tea. She said she could if I would wait until she made it on a gasoline-stove. I told her I was in no hurry, only I wished to go over to the church before the rehearsal was over. In a little time she brought a cup of tea. The cup was not quite full. She explained that, as I was in a hurry, she would bring half a cup at once, and the other half by the time I needed it. So I sipped it with my spoon, and finally told her she need not make any more, for that was all I needed. When I asked how much for her trouble she said she did not exactly know, so I gave her a dime; and when she started to get the change I told her that no change was needed—it was worth all that to start a fire for one cup of tea; but she replied, "Oh, dear! no. Five cents is my regular charge for a *full* cup of tea, and you had only *half* a cup. I don't think I ought to charge you quite five cents." At this I had a good laugh, and finally persuaded her to keep the *whole* of the five cents; but she would not take a cent more.

Now, friends, I have been telling you two little simple incidents, and perhaps you may wonder why I mention them at all. I have taken pains to tell them in detail to show you there are thousands of people, in the common walks of life, at least, who do really hunger and thirst after righteousness. I believe they really *want* to do as Jesus would do. This spirit is common among the women-folks and the children, if not so common among the men, and may God be praised for it. The *majority* of our people here in Ohio—yes, in the whole country—want to be fair and honest; they want to be liberal, to give full value for all they receive, just like the landlord at the hotel and the woman at the little bakery; and the children across the way at that little rehearsal, that I reached just as they were disbanding, are being taught that same spirit. May God bless the institution of children's day; and may he help us who are older to encourage this spirit among those children, of doing as Jesus would do; and let us remember that it is a thousand times more important we should teach these children to follow "in his steps" than it is to succeed with crops or domestic animals, or money-making of any kind; and it is a thousand times more important, also, that we should *wrest the reins of government* from the hands of these wicked men who have no regard for our children or any thing else but money-getting. If there is any class of people in this world who should be trying from the bottom of their hearts to do every day *as Jesus would do*, it is the ones who make our laws, and manage the affairs of government. In at least one town in our United States the people decided a while ago to have a Christian marshal instead of the kind they had been having. This Christian marshal happens to be a subscriber to GLEANINGS, and I have obtained his permission to publish the following letter for the encouragement of other towns.

Mr. A. I. Root:—You have done me so much good by your Home talks I must tell you the good news from Marion. Six saloons have run here for many years. Last year we elected three temperance aldermen, but could not put out saloons. This year we elected one more, which makes four temperance aldermen out of six, so saloons will go out of Marion the 21st of June, 1900.

We have had two different city marshals here in the last year. The aldermen refused to confirm either of them, therefore the mayor had to appoint them every month. They stood in with the saloons, and did not enforce the law; so at the last election the temperance people of Marion asked me to take the office, promising me their support. I took the appointment the 14th of May; was confirmed by all the aldermen over five or six other applicants, and I had been here only 14 months; but the people knew that I was strictly temperate, hence my appointment.

The other day a saloon-keeper said I had done more in one week than the other marshals had done in a year. I am sweeping clean as I go, in a mild and pleasant manner, but firm; I favor none, yet, Bro. Root, it is not I that is doing it—it is the Lord. I ask him to go with me in all my duties, remembering that the Lord and one make a majority.

R. H. HUMPHRIES,
Marion, Ill., June 4. City Marshal.

CHRISTIANS FOR MAYORS, POLICEMEN, ETC.

Now may I say to the people of your town, friend H., that the wets will go right to work to get you out of office if they possibly can. No hook or crook will be left untried; and if temperance and Christian people get an idea that the victory is won, and that they need not bother themselves *particularly* about it hereafter, they will get into the background again. Nobody knows until he has had a hand-to-hand conflict with the powers of evil how wily Satan is.

Along with the letter from our good friend Humphries came two newspaper clippings which I take pleasure in giving below. The latter was taken from a local paper printed in Marion.

Our former fellow-citizen, R. H. Humphries, is now city marshal at Marion. Mr. Humphries is not a very fluent speaker, but his magnificent physique will in itself serve as a strong deterrent to evil-doers. Besides, he is a determined man who will do his duty without fear or favor. The people of Marion are to be congratulated on the selection, and the lawless element will have to "toe the mark" while Henry wears the star.—*Galatia Monitor.*

City Marshal Humphries played a funny trick on one of our saloons the first Sunday he was out with the star and club. He stepped up to the rear door of Askew & Cash's saloon, and, giving a peculiar tapping, awaited results. Presently the door was cautiously opened, and the star-and-club man socked his big foot in the crack thus made. He quietly opened the door and stepped in, where lo! he saw several of "the boys" refreshing the inner man with the juice that sparkles and beads and foams. No, the boys didn't any of them break their necks to shake hands with nor set 'em up to Humphries; but when the little bill was presented to Askew & Cash on a plea of guilty, it read: "Thirty dollars and costs." That's more than it used to cost to shoot a man here.

NOTES OF TRAVEL
BY A. I. ROOT

A VISIT TO THE OHIO EXPERIMENT STATION.

When it was fairly daylight (even before four o'clock at this time of year) I was on my wheel again, and almost alone, in one sense, for rarely did I see a farmer up at that early hour. I wonder if farmers are not taking things a little easier nowadays than they did fifty years ago. Most of them have fine comfortable homes—at least through the part of Ohio where I rode that morning. In fact, they have every thing in such good order perhaps it is not *necessary* (any more) for them to get up before sunrise. For my part, however, I believe I shall always want to be up at the peep of day, and then take a rest when the sun is hottest.

I was afraid I should not be able to find any breakfast in the large town of Wooster by the time I reached there; but one enterprising restaurant was already open; and for a very small sum I had a breakfast that should prompt any one to give thanks *after* the meal as well as *before* it.

For the first time, I think, I rode all the way up the great hill that leads to the greenhouses at the station. My good breakfast may have had something to do with it, and also my light Cleveland wheel, with its gear-case over the chain. I dropped my chainless for this wheel about a year ago because the makers would not give me a chainless as light as the present one I am riding. They insisted on making me use a wheel that would carry a man weighing 250 pounds, while I weigh only half that. This light Cleveland wheel I am riding, with a rubber case entirely inclosing the chain, will run as long without oil, I believe, as the chainless.

When I reached the greenhouse a small boy said he did not think anybody had got around yet, but he guessed he could show me where I could get inside and look at the plants. Very soon a bright young man was showing me around. Then I ran across another one, who was formerly in my employ; and later still a bright young boy who was brought up near my home, and has always been greatly interested in high-pressure gardening. He has just secured a place in the service of the station.

I can not tell you of all the beautiful things in that greenhouse. It is mostly occupied with tomatoes, and they have been selling them for several weeks past. Their market is the city of Cleveland, and they get 20 cts. per lb. for them. Prof. Green told me later the prices they are paid for hot-house tomatoes near large cities will pay very well for building a house and running it exclusively for tomatoes. They are certainly as fine as if not finer than any grown in the open air. I know this through the kind courtesy of Prof. Green's good wife, who invited me to their home to dinner.

The flower that took my attention more than any thing else was the gloxinia. The specimens were grown from seed; and one package of seed gave variations that were not only wonderful in their beauty, but as you examine first one and then the other you can hardly tell which is the loveliest. Oftentimes I have wondered and pondered that a little insignificant-looking seed should have wrapped up in its little self the elements of such wonderful beauty; and when we see that there are hardly any two exactly alike, it makes one feel (especially with the gloxinia) as if nature had been using her wonderful skill to hold up before your face one form of tantalizing beauty and then another, until you are almost bewildered with the gorgeous coloring and graceful and fantastic shapes of her creation. We are trying to grow gloxinias from bulbs in our own greenhouse. They do not just like our method of treatment, or something else is the matter. A bougainvillia vine was arched over the entrance leading to one of the greenhouses, and it brought forth exclamations of delight. What a very bright and sprightly plant this is! It makes one think of a lot of butterflies nestling among the green leaves. We have two small ones on our grounds doing fairly well. Begonias of all kinds were growing, some of them into small trees, in the station greenhouse; but our begonias do not thrive for some reason. We have tried them in the sun and out of the sun.

Our Ohio experiment farm is so large Prof. Green's home was nearly a mile away. He has charge of all the fruit. I found one of his men bumping plum-trees, and I learned afterward that they were just about through, for they have got the curculios morning after morning so long that now not enough were left worth going the rounds any more; and many of the trees were bearing magnificent crops of plums, with scarcely a stung one in the lot. Why, on some of the trees the plums were piled together like bunches of grapes, and the trees would break all to pieces if the plums were not thinned out. Luscious cherries were already ripe. One of them I liked so well I am going to get some trees for my own planting. It is called the Northwest. It is of very good size, beautiful shape, and fully sweet enough to eat out of the hand, without any sugar; besides, it is ripe just about with the earliest strawberries. Prof. Green also recommended the Louis Phillip, just a little later. They have two new hardy plums which he recommended—the "Reed" and the "Richland." The Northwest cherry was purchased of Stark Brothers, Missouri.

Some of the peach-trees are going to bear very fair crops. The peach yellows has never yet made its appearance at the Wooster Station, although it is almost all over the State. All the fruit is given clean level culture—just bare ground between and around the trees.

Prof. Green has a new way of training grapes. He objected to the Fuller system (and I do too), because one can not get through the trellises. His new plan is to support the vines and wires so high up on posts that one can walk under them, letting the clusters of fruit hang just over your head. The posts are iron pipe. This can often be bought from piles of old iron. Across the top, just so as to clear your head, is a cross-piece, something like that on a telegraph-pole. The pieces are 2 feet long. The central wire runs under, and the two outer wires on top. These outer wires are stapled clear out to the outer upper corner. The vines are then trained along the central wire, with the side shoots carried off over the outside wires. With this arrangement one can cultivate under the grapevines both ways (with a small horse), just as you would among the fruit-trees, and nothing hinders you from going crosslots in either direction through the vineyard. While commercial grape-growers may not fancy this arrangement, it strikes me as being just the thing for home grounds.

It would take a page or two to tell you about the experiments in growing wheat. Our first visit was to a plot where potatoes had been grown the year before. This ground was so rich that it needed nothing more to make a good crop of wheat; therefore in some places the wheat fell down worse where fertilizers were applied than on the "nothing" plots; but as a rule the chemicals gave a marked increase. At other places on the farm they have grown wheat year after year for a dozen years or more on purpose to exhaust the soil so it absolutely could not grow wheat any more worth harvesting. On this ground the "nothing" plots *showed* nothing. There were just a few straggling plants with poverty-stricken heads of grain; but right beside these plots, with a sharply defined line, was magnificent wheat under the influence of only a very small quantity of just the right kind of chemical fertilizers. They are to have some photographs of these plots so as to make it plain that on many of the exhausted farms of Ohio, where wheat can not be grown so as to have a crop worth harvesting, magnificent crops may be secured by the application of the proper chemicals. If I am correct, each farmer must ascertain for himself what chemical is needed to give the best results. Permit me to digress a little right here.

Yesterday, June 18, I visited the sub-station at Strongsville, only a dozen miles due north of my home. Our station selected this spot because it was some of the *poorest* land in Ohio. The ground was not fit for any thing until it was underdrained and manured. Well, Mr. Mohn, the manager, showed me plots of wheat last evening that were just beautiful, with the "nothings" beside them literally nothing. The only thing that made the crop was 8 pounds of dissolved boneblack. I am sorry I did not get the dimensions of the beds used for tests; but I do not think they were more than 20 feet wide by about 100 long.

This boneblack costs only $16 a ton, so I am told. I think Mr. Mohn told me 400 pounds to the acre is enough to grow a good crop of wheat; that is, $3.00 or a little more for chemicals would give a splendid crop where otherwise there would be nothing worth harvesting. There were other plots where nitrate of soda, muriate of ammonia, and various other chemicals, were added to the boneblack; but he agreed with me that they did not seem to be much if any better. On this particular soil the nitrogen and potash were not needed—only phosphoric acid. Before we got through I saw where an experiment was made with wheat bran; and this too gave almost as good a stand of wheat as the boneblack, but I think rather more of it was used.

The experiments at this sub-station have for two years shown a great saving in expense by using home mixtures; and, to come right down to the facts in the case, oftentimes no mixtures are needed at all. When the farmer finds out just what he wants, one single element may do him just as much good as a mixture. The thing for him to do is to *find out* just what is required, and not waste his money by putting something on his land that it does not need. Do some of you smile to think I am favoring chemical fertilizers? Well, I am. But, hold on a minute. The plots fertilized with barnyard manure are just as good, or very nearly so, and the barnyard manure, to a certain extent, costs the average farmer almost nothing. Let him save every bit of it; then if he still needs fertility, let him buy the chemicals.

Prof. Green and his good wife are not only interested in every thing pertaining to the farmers' crops, but they are deeply interested in the welfare (moral and spiritual) of the farmers' children. And why shouldn't they be? They have quite a family of bright interesting children of their own, and the children were along with us listening to our talk. Paul, the oldest, has been reading GLEANINGS. His mother said he was very anxious to ask me some questions if I was willing.

To be sure, I am willing, dear children, all you who read GLEANINGS; and it gave me a new thrill to know that some child or growing boy wanted to know something I could tell him. One thing he wanted to know was how to find a bee-tree. Then we talked about opera-glasses, cheap ones (you need something of the kind if the tree is a tall one); then we talked about kodaks, bicycles, and lots of other things. The younger ones were in the berry-patch picking berries, and discussing the respective merits of the new varieties.

Before I was ready to go it was half-past two; and to get home that night I should have to catch a train 17 miles away, and a strong north wind would be right in my face every mile of the way. I do not like a wind in my face while wheelriding, and I do not like a *north* wind any way you can fix it; but if it is behind my back I do not mind it so very much, because with a good road I can usually travel *faster* than the wind does. But what can't be cured must be endured, and so I started out. When within three miles of my destination I was so used up I slowed up and concluded I would not try any more. Then the thought struck me that possibly the train might be late; so I decided to do the best I could without becoming too much tired, and take the chances. The train was fifteen minutes late, and I reached the station with five minutes to spare. The ride was rather more than I like to take against the wind; but when I got rested up I took the trip to Strongsville I have been telling about, and made 12 miles, coming home, with a north wind at my back, between sundown and dark, and I enjoyed every mile of it. Now, may be I had better tell you that I had baked beans for dinner, and a few more of them for supper, before I took this twelve-mile ride. Why, it seemed as if my wheel went of itself, and it was just fun to fly at breakneck speed up hill and down, without even being aware that I was exerting my strength of any account. I not only had the north wind at my back, but I felt that wonderful "second wind" thrilling every fiber of my being; and, more than all and above all, I felt in my heart God's love, and a love toward all humanity that live and breathe under God's clear sky, in the farmers' homes scattered all over our land.

HIGH PRESSURE
GARDENING
BY
A. I. ROOT

WHAT CAN WE PLANT OR SOW DURING THE FORE PART OF JULY?

Almost every thing. If frost comes early it may be a little late for lima beans unless it is Wood's Improved bush lima. This will be all right; also all kinds of wax beans and all kinds of white field beans. In fact, if you plant them now they will be pretty sure to escape the bean-weevil. Beets for table use will be all right, and you can get good sized beets and mangles for stock. With good plants you can grow any kind of cabbage. All kinds of carrots will be all right. You may not get full size, but that does not matter if you put the seed a little thicker. It is just the time to sow cauliflower seed to get the very best cauliflower that can be grown at any time of the year; and it is just *the* time to put out all kinds of celery if you have good plants. Early sweet corn will come in just right, and if you take my advice you will put in some Country Gentleman if you want something finer for table use than any other that is grown in the world. It is just the time for cucumbers, either for pickles or for slicing; also for lettuce if you are careful to shade it with cotton cloth just before it matures so as to bleach it and keep it white. Melons will usually ripen if you use the earliest sorts, and you can still plant onion-seeds for growing sets. In fact, if you have any seed left over it ought to be put in for sets right off now. The sets will always sell, no matter what kind of seeds you plant.

Parsnips may be sown now, but they will not get to be very large. All the better, though, for table use. All kinds of peas will mature if they get through the hot weather. We sow them all through July, and seldom fail in getting nice peas. Peppers are all right if you can get some good plants. You can plant pumpkin seeds now, and get *ripe* ones of the Early Sugar variety. Rhubarb will make good plants this fall that will give stalks for pies next spring. Radishes may be sown all through the summer and fall. Oyster-plants will grow small roots, but they are all the nicer if you put them on good soil. Spinach is all right this month and next. Summer squashes do finely, but it is a little late for the Hubbard. You can still grow tomatoes on ground that is vacated if you have some good strong plants to put in; and it is just the time to sow Breadstone and Yellow Aberdeen turnip seed. The White Egg and Yellow Top and Globe had better be put in later.

Finally, you can still plant potatoes if you have any old ones left in your cellar or can get them anywhere. It does not make much difference how much they are wilted or sprouted. If we have rains during the month, the potatoes will just "climb."

Now, do not let your garden grow to weeds because you have already grown a crop on some parts of it. Spade under the old pea-vines, lettuce gone to seed, weeds if there are any. Rake it over and get on something else. Do it to-day or to-night, even if you have to work a little by starlight. It is not much work to keep the garden growing something valuable every day and every hour, and just think how much better it looks.

Somebody asked what kind of honey-plants could be sown now. Why, bless your heart, it is the very nicest time of the year for buckwheat, crimson clover, and turnips, seven-top or the other kind; and the buckwheat gives you a honey crop and a crop of grain this fall. Crimson clover gives you a honey crop, and a crop of seed worth at present $5.50 a bushel, next spring; and the turnips that you do not pull up for table use will come up in the spring, and produce splendid greens for the table if you want them; and if you don't, they will give a lot of honey when almost nothing else is in blossom. Now, if you like to see things grow, just "go in and win." We can still furnish seeds of almost every thing I have mentioned.

Oh dear me! I forgot to say a word about strawberries. There is no nicer time and no nicer month in the year to put out a strawberry-patch than July. Use potted plants if you are a green hand; but if you have learned the trade, put out layer plants, and you need not have one plant die in a thousand. If you get your plants out in July you will have a good crop of extra fine berries next spring. Now, please do not say that I have said nothing about high-pressure gardening in this issue.

Oh, yes! one thing more. If you get this July garden started, keep the surface raked over nicely, as I told you about in GLEANINGS for June 1, page 449—"level cultivation and dust mulch." We have been doing that same thing in our garden this summer, and it is less trouble than any other plan. The garden is always "a thing of beauty and a joy forever;" and, oh my! how the things do grow!

THE LOGAN BERRY IN CALIFORNIA; BELGIAN HARES, ETC.

I thought you might like to know that the Logan berry does well here. They are in market much of the time. I have been told that they do best when allowed to run over the ground. They seem like a dark-red, rather sour large blackberry. The Belgian hare is raised very commonly here in narrow quarters, and they increase with great rapidity. All I have seen were kept in boxes or wire cages.

Santa Barbara, Cal., June 16. L. W. DENSMORE.

WATER-WITCHING; WHAT THE U. S. WEATHER BUREAU THINKS OF IT.

We clip the following from the *Monthly Weather Review*, issued by the Department of Agriculture, under the direction of the Chief of the Weather Bureau:

> According to the *Scientific American* for April 7, 1900, a commission has been appointed in France to study all apparatus and methods employed by sorcerers, water-seers, and wizards, who use the divining-rod, mineral-rod, exploring pendulums, hydroscopic compasses, and the other instruments which go by a host of other fanciful names. The French engineer, M. Borthier de Rolliére, is the president of the commission. He will procure divining-rods of all kinds, including books, reviews, journals, reports of experiments, together with the names and addresses of the inventors of the alleged devices. All the facts and documents may be sent to M. de Rolliére, care of Cosmos, 8 Rue Francois Premier, Paris, France. It is to be hoped that the findings of this commission will, once for all, settle the question of the divining-rod, not only for the discovery of water, but also minerals. In England, particularly, the water-diviner plies his lucrative profession without legal interference, and, strange to say, his dupes are often town authorities. The whole business is akin to that of the fortune-teller, the spiritualist, or any other charlatan, and it is strange that the exponents of such systems are allowed to pursue their avocations undisturbed by fear of prosecution. At present the victims are the only ones punished.

THE TRAFFIC IN TOBACCO.

No, you don't say half enough against tobacco. Nearly all the boys take the first step toward rum from using the weed. I tell the grocers they are as bad as a rumseller, only on a more common and easy scale, and some begin to see it. What a sham and shame to partake of the Lord's supper, then go into the store and deal out death and poverty in the different forms of the poison weed! E. P. CHURCHILL.

Hallowell, Maine.

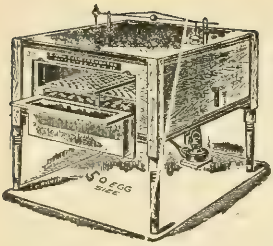
At the offices of the Anti-cigarette League it was said yesterday, in discussion of Willis Moore's order, that the Chicago, Burlington, and Quincy Railroad on some of its divisions had forbidden the use of the cigarette.

A merchant reported to the Anti-cigarette League that he had in his employ 75 men, of whom 8 were habitual smokers. He said that if the entire force smoked as the 8 did he would have to double the number to get the same amount of work.

Montgomery Ward & Co. have refused to employ boys addicted to cigarette-smoking.—*Chicago Tribune.*

INDIA RELIEF FUND.

Eveline Lesh, Eagleville, Mo.	$ 1 00
Mrs. D. E. Nuckols, Banister, Va.	1 00
D. E Nuckols, Banister, Va.	50
Mrs. D. C. Reynolds, Banister, Va.	50
Miss S. Reynolds, Banister, Va.	50
	$3 50

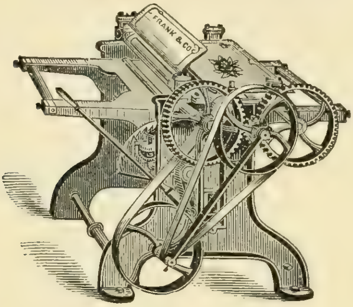


A PERFECT INCUBATOR

That is what every one says of the **New C. Von Culin Incubator** (and Brooder). It has all the latest improvements which have been found of any merit. **Will Hatch Every Hatchable Egg.** Self-regulating, safe, sure. Send for illustrated catalog and price list of Incubators, Brooders, etc., free. Poultryman's Plans and catalog, 10 cts. Address

THE W. T. FALCONER MFG. CO.,
Box M. Jamestown, N. Y.

In writing advertisers, please mention Gleanings.



PLANERS

The above cut shows one of our small Planers, of which we make twelve different styles and sizes. Also large Planers, Band Saws, Buzz Planers, Moulders, Wood Lathes, and all kinds of

WOOD WORKING MACHINERY

Send for Catalogue.

The FRANK MACHINERY CO.
BUFFALO, N. Y.

THE IDEAL HOG FENCE

GOOD FENCE!

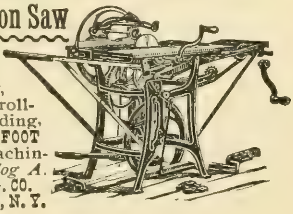
Makes good neighbors. Why not have both when you can make the best for

20 to 35 Cents a Rod.

A little inquiry into the merits of our system of fencing will repay you handsomely. Write to-day for free Catalog.

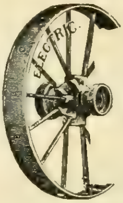
KITSELMAN BROTHERS, ⓒ
Box 51 Ridgeville, Indiana, U. S. A.

Union Combination Saw



For Ripping, Cross-cutting, Rabbeting, Mitering, Grooving, Gaining, Boring, Scroll-sawing, Edge-moulding, Beading. Full line **FOOT** and **HAND POWER** machinery. *Send for catalog A.*

SENECA FALLS MFG. CO.
44 Water St., Seneca Fs., N. Y.



GOOD WHEELS

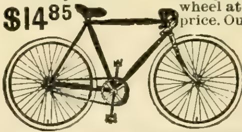
MAKE A GOOD WAGON.

Unless a wagon has good wheels it is useless. **THE ELECTRIC STEEL WHEELS** are good wheels and they make a wagon last indefinitely. They are made high or low, any width of tire, to fit any skein. **They can't get loose, rot or break down. They last always.** Catalog free.

Electric Wheel Co., Box 95 Quincy, Ills.

BICYCLES FOR EVERYBODY. NO MONEY IN ADVANCE.

Shipped direct to anyone and guaranteed as represented or money refunded. Save agents large profits and get a wheel at rock bottom wholesale price. Our **Arlington Model K** is the greatest bargain ever offered; in lots of one or more at **$14.85**

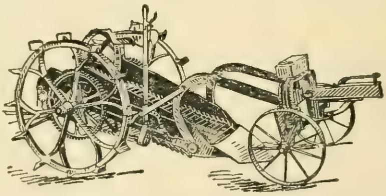


$35 "Arlington" $16.50
$40 " $18.50
$50 "Oakwood" $21.50

Good wheels $12.50, $11.00 & $10.00 Stripped Wheels $7.00 the Arlington & Oakwood are strictly high grade and the best that can be made. Thoroughly tested and fully guaranteed. Over 100.000 riders can testify to their superior quality, style, construction and workmanship. Illustrated catalog free. **CASH BUYERS' UNION, 162 W. Van Buren St., B-345, Chicago, Ills.**

In writing, mention Gleanings

How are You Going to Dig Your Potatoes?



It will be time very soon to dig your potatoes; and, in fact, in some places it is time already. If you want something that will put the potatoes *all* on top of the ground, and do it, too, with one good strong team, you probably can not do any better than to use the Dowden potato-digger, made by the Dowden Mfg. Co., Prairie City, Iowa. Drop them a postal card, and they will cheerfully give you all the particulars, answering every question anybody will probably ask in regard to the machine.

WANTED.—To sell a Morson foot and hand circular saw, in first-class condition for bee-hive work.
P. P. COLLIER, Mexico, Mo.

The Modern Farmer and Busy Bee.

Emerson Taylor Abbott, Editor.

A live, up-to-date Farm Journal with a General Farm Department, Dairy, Horticulture, Live-stock, Poultry, Bees, Home and General News. The Editor has had practical experience in every department of farm work. To introduce the paper, it will be sent to New subscribers one year for 25c. Sample copies free. Best Advertising Medium in the Central West. Clubbed with *Gleanings* for $1.00.

ADDRESS

Modern Farmer, St. Joseph, Mo.

QUEENS. I am now able to resume work in the apiary, and have on hand very nice untested queens from choicest stock, 60c; yellow all over, 75c; tested, $1.00; select, $2.00. Very prolific, and good workers.

GEO. VANDE VORD, Daytona, Fla.

FREE. Porter Bee-escape with each 35c subscription to Poultry, Bee, & Fruit Journal, Davenport, Iowa. Send to-day.

SUPERIOR HONEY QUEENS. Bred from our superior strain of Italian Queens. Untested, each, 50c; ½ doz., $2.75; tested, $1 00; ½ doz., $5 00.

LEININGER BROS., Fort Jennings, O.

Wants and Exchange.

Notices will be inserted under this head at one-half our usual rates. You must SAY you want your ad in this department, or we will not be responsible for any error. You can have the notice as many lines as you please; but all over ten lines will cost you according to our regular rates. We can not be responsible for dissatisfaction arising from these "swaps."

WANTED.—To buy 500 bu. No. 1 dry rice popcorn.
GEO. G. WILLARD, 270 Pearl St., Cleveland, O.

WANTED.—To exchange new and second-hand bicycles and 1 H. P. gasoline-engine for machinery, tools, etc.; Barnes and Union saws.
ROBT. B. GEDYE, La Salle, Ill.

WANTED. — Steady employment with some bee-keeper, preferably in Colorado, by a young man 18 years old. References given and required
R. O. CLARK, Lake Crystal, Blue Earth Co., Minn.

WANTED.—To exchange new J. W. Pepper banjo, best quality, for rifle (single shot or repeater, medium caliber), hand-books of the crafts, or offers in books.
G. F. TUBBS, Annincreek, Penn.

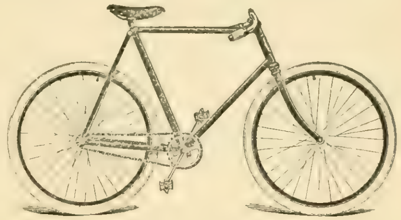
WANTED.—To exchange for property in Texas, or sell, 125 colonies of bees in A. I. Root's 10 frame Simplicity hives, in fine condition and good pasture.
E. SANDFORD & SON, Nokomis, Ill.

WANTED.—To exchange one extractor, Root make, good as new, 2-frame; one honey-vat that holds 2400 lbs.; a lot of Root chaff hives; two comb baskets, and one uncapping can. I should like any thing useful in the grocery or any thing else.
G. G. GREEN & SON, Lyons, Ohio.

WANTED.—To exchange for anything useful in bee business, tested or untested Italian queens from imported or golden mothers; bred 3¼ miles apart. Also want pure black-and-tan rat pup.
J. M. DAVIS, Spring Hill, Tenn.

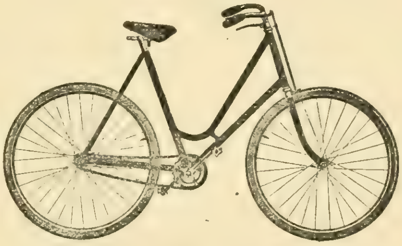
WANTED.—To exchange modern firearms for flint-lock guns and pistols of all descriptions.
WM. S. AMMON, 216 Court St., Reading, Pa.

BARGAINS IN BICYCLES.



GENTS' WHEEL.

We recently sold to a large bicycle factory in Akron, Ohio, a carload of crates for shipping their wheels in, and we have taken some wheels in part payment at their lowest jobbing prices. In order to turn these wheels into money quickly we propose offering them to our readers at very nearly cost, or one-third off regular selling prices. We have the wheels in stock, and have tested and examined them carefully, and can recommend them as good medium-grade wheels that will give good service. We went through the factory and saw how they were made and they are well made—no shoddy work about them in any particular. They are guaranteed by the manufacturers for one year from date of sale.



LADIES' WHEEL.

We can furnish either gents' or ladies' pattern. Catalog giving full particulars and specifications will be mailed on application. The price of models 30 and 31 will be $20.00, and we will take pay in beeswax or honey, or give 5 per cent discount for cash with order. If you have honey to exchange, send a sample if it is extracted, and tell how it is put up. If comb, give description and say how packed.

It would take about 200 pounds comb honey or 300 of extracted of fair average grade to pay for a wheel. Don't ship any honey until you first advise us. If interested let us hear from you promptly, for we do not expect to have these wheels long. They are more than one-third gone already right here at home.

THE A. I. ROOT CO., Medina, Ohio.

H. G. Quirin, the breeder of improved golden Italian queens, has an advertisement on page 546. It will interest all who buy queens. His motto is, "Queens promptly by return mail". The readers of GLEANINGS will do well to give his stock a trial.

H. G. Quirin, the Queen-breeder,

is, as usual, again on hand
with his improved strain of

Golden Italian Queens.

Our largest orders come from old customers, which proves that our queens give satisfaction. We have 12 years' experience breeding queens; no bee-disease in our locality; queens are sent promptly by return mail, with safe delivery guaranteed.

PRICE OF QUEENS AFTER JULY 1:

	1	6	12
Warranted	$ .50	$ 2.75	$ 5 00
Selected, warranted	.75	4.00	7 00
Tested	1.00	5 00	9.00
Select tested	1.50	8.00	
Extra selected tested—the best that money can buy	3.00		

ADDRESS ALL ORDERS TO

H. G. QUIRIN, Parkertown Erie County, Ohio.

Money-order office, Bellevue, O.

STRONG TESTIMONY

in Favor of

Moore's Strain of Italians

Frank Benton, of Washington, D. C., whose name is familiar to all progressive apiarists, writes me, Feb'y 20, 1900, as follows:

> "I have several times, in the course of correspondence, and in conversing with bee keepers, had occasion to answer the question: 'Where can the best Italians be got?' It is, perhaps, not an easy thing to say, with certainty, but at least I have felt I might be able to tell where GOOD ones could be obtained. A number have referred to you, for, although I have not tested your stock personally, I thought I knew pretty well, from general reputation, its character. A bee-keeper near here—Mr. Geo. A. Lamphear, of Vienna, Va.—who got some queens of you on my recommendation, is so well pleased with them—in fact, gives your bees such a good recommendation to me for gentleness and working qualities, particularly their working on red clover, that I thought I would like to try some myself."

I was not aware that Mr. Benton was recommending my stock until I received the above letter. Such testimony as this certainly has great weight. Don't you think so? My stock is the result of 21 years of careful breeding, by selecting the best honey-gathering stock each season from which to rear queens, and crossing them as far as possible with drones not akin.

Prices for July: Warranted queens, 75c; 6 for $4.00; 12 for $.750. Select warranted, $1.00 each; 6 for $5.00; 12 for $9 00. Strong 3-frame nucleus, with warranted queen, $2.50. Safe arrival and satisfaction guaranteed.

CIRCULAR FREE.

J. P. Moore, Lock box 1, Morgan, Pend. Co., Ky.

July Queens! July Prices!

Untested, 50c; $6.00 per dozen. Tested, $1.00 each. From our superior strain of 3-band Italians, the best of honey-gatherers. Large prolific queens, mothers of strong colonies. Send for our price list, and see what others say. Orders filled promptly, and satisfaction guaranteed.

J. W. K. Shaw & Co., Loreauville, La.

Queens, Nuclei, and Colonies.

Best of Honey Queens. Special prices to introduce during July, Aug., and Sept. Untested queens, 50c each; $5 50 per doz. Tested, $1.00 each. Nuclei, add 50c per frame to price of queen. Write your wants. Satisfaction guaranteed.

S. P. CULLEY, Higginsville, Mo.

Our Bees are Busy

now carrying loads and loads of pollen and sweets from the flowers to raise the thousands of new bees for the coming honey crops. We are busy with the orders for Hives, Sections, Foundation, Comb to enable the bees to spread themselves over a surface for rapid work.

Many implements and fixtures to help the people to handle the bees conveniently and with profit.

Drop us a postal card and we will send a catalog of the best and latest Bee hives, etc.; contains also instructions for successful managing of bees for profit.

: : ROOT'S : :

ABC OF BEE CULTURE

If interested in buying groceries, ask for our wholesale list, and it will also be mailed.

We have sold several carloads of Root's hives and supplies, and can make you the best prices for quantity ordered besides a saving of freight in points adjacent to Evansville.

ADDRESS

Vickery Bros., Evansville, Ind.

WHOLESALE GROCERS.

DITTMER'S FOUNDATION!

AT WHOLESALE AND RETAIL.

This foundation is made by an absolutely non-dipping process, thereby producing a perfectly clear and pliable foundation that retains the odor and color of beeswax, and is free from dirt. Working wax into foundation for cash, a specialty. Beeswax wanted. A full line of supplies at the very lowest prices, and in any quantity. Best quality and prompt shipment. Send for large illustrated catalog.

GUS DITTMER, : : : AUGUSTA, WIS.

Root's Goods for California.

We have just received a large carload of sections, extractors, smokers, veils, etc., direct from the factory, and are prepared to supply bee-keepers with the same promptly. Do not send a long distance and pay high freights. Write for our prices.

M. R. MADARY, - Fresno, California.

Root's Goods in Kansas.

Carl F. Buck, Augusta, Butler County, Kansas.

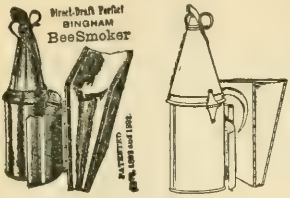
D. COOLEY,

Dealer in **BEE-KEEPERS' SUPPLIES,**

KENDALL, MICH.

Root's Goods at Root's Prices. Catalog free.

POULTRY BOOK FREE, 64 pages, illustrated, with 3 months' trial subscription to our paper, 10 cents.
Inland Poultry Journal, Indianapolis, Ind.



BINGHAM SMOKER.

DEAR SIR:—Inclosed find $1.75. Please send one brass Smoke-engine I have one already. It is the best smoker I ever used. Truly yours,
HENRY SCHMIDT, Hutto, Tex.

MADE TO ORDER.

Bingham Brass Smokers

Made of sheet brass, which does not rust or burn out; should last a lifetime. You need one, but they cost 25 cts. more than tin of the same size. The little open cut shows our brass hinge put on the three larger sizes. No wonder Bingham's 4-inch smoke-engine goes without puffing, and does not drop inky drops. The perforated steel fire-grate has 381 holes to air the fuel and support the fire.

Heavy tin smoke engine, 4-inch stove per mail, $1.50; 3½-inch, $1.10; 3-inch, $1.00; 2½-inch, 90c; 2-inch, 65c. Bingham smokers are the originals, and have all the improvements, and have been the standard of excellence for 22 years. Only three larger ones brass.

T. F. Bingham, : : Farwell, Mich.

Marshfield Manufacturing Company.

Our specialty is making SECTIONS, and they are the best in the market. Wisconsin basswood is the right kind for them. We have a full line of **BEE-SUPPLIES.** Write for free illustrated catalog and price list.

Marshfield Mfg. Co., Marshfield, Wis.

NOW READY!

64-page Catalog of Every Thing Bee-keepers Need.

Illustrated and fully described. Especially valuable to beginners for the information it contains Send your address on a postal and get it NOW. Established 1884.

J. M. Jenkins, Wetumpka, Alabama.

Say! Improve Your Bees.

Did you know that we are rearing golden Italian queens from our famous $100 breeder Victoria? Stock unsurpassed for beauty, gentleness, and honey-gathering. Queens very prolific; bees do not crowd broodnest with honey; swarm very little, and enter supers readily. Also 3-banded queens from our fine breeders, Jewell and Beauty. Stock hardiest, gentlest, and best strain in the world. Prices, either race for the rest of the year, unt., 75c; 6 for $4.25; select warranted, 25c extra. Tested, $1.25. Holy Lands same price. Special discount in quantities. Circular free.

O. P. HYDE & SON, Hutto Texas.

We give free sel. test. queen for every $10, and a fine breeder for every $25 worth of orders at circular prices.

REMOVED!

EARLY QUEENS. W. H. Laws has removed his entire queen-rearing apiaries to Round Rock, Texas, where he will be better fitted than ever to fill orders for the LAWS strain of FAULTLESS 5-BANDED bees the coming season. BREEDING QUEENS always on hand. Price $2 50 each. I am also breeding the leather-colored stock from imported mothers. Tested queens, either strain, $1 00; 6 for $5.00; untested, 75c; 6 for $4.00. Queens ready in season.

W. H. LAWS, Round Rock, Texas.

Queens.

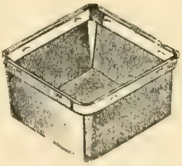
Use No Smoke. **It is not necessary** with the **Sweetheart** strain of bees. A postal card or letter will bring my descriptive circular and price list of these **gentle hustlers** and other strains. I am booking orders for them now, which will be filled in the order received. Don't delay.

A. J. WRIGHT,
Bradford, Steuben Co., N. Y.

Fruit Packages of All Kinds.

—ALSO—

BEE-KEEPERS' SUPPLIES. . .



Order your supplies now before the busy season catches you. Price list free. Address

Berlin Fruit-box Co., Berlin Heights, Erie Co., O.

SEE THE POINTS!

I have had fifteen years of experience in producing honey and rearing queens; I am breeding queens from a queen procured last spring from J. F. McIntyre, of Sespe, California. He describes this stock on page 12 of Gleanings for Jan. 1st, as filling the supers when other colonies were actually starving. The drones in my yard are from excellent stock—such as that of J. P. Moore, of Kentucky. I rear queens by the Doolittle method, send them by return mail, and guarantee safe arrival, purity of mating, and satisfaction, at 50 cts. each, in any quantity. Money refunded if queens are not satisfactory. Send for circular.

L. H. ROBEY, Worthington, W. Va.

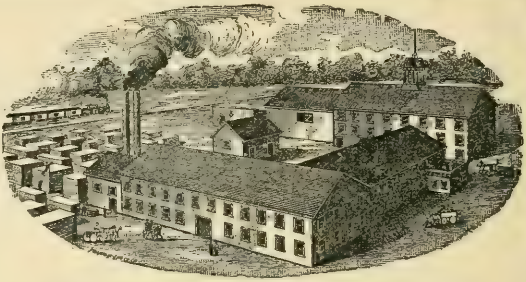
QUEENS. GOLDEN ITALIANS. Unexcelled for business, beauty, and gentleness. Bred from the best of stock obtainable. Untested, 60c each; 6, $3 25; 12, $6.00. Tested, $1.00 ea. Extra fine breeding-queens, $2.00 each. E. A. SEELEY, Bloomer, Ark.

WANTED.—To sell fifty colonies of bees in good Langstroth hives. Reason, going to Oregon. Must sell by July 1. P. P. COLLIER, Mexico, Mo.

BEE-SUPPLIES!

We have the best-equipped factory in the West. Capacity, one carload a day; and carry the largest stock and greatest variety of every thing needed in the apiary, assuring BEST goods at the LOWEST prices, and prompt shipment. We want every bee-keeper to have our FREE ILLUSTRATED CATALOG, and read description of Alternating Hives, Ferguson Supers, etc. *Write at once for a catalog.*

We also manufacture TANKS of either wood or galvanized steel, all sizes, any form, and for all purposes. Price list free.



KRETCHMER MFG. CO., Red Oak, Iowa.

$10.00 REWARD

To the party who sends me the most money for bees and queens between April 1 and Nov. 1, 1900.

HIGH-GRADE STOCK
BY RETURN MAIL
MY SPECIALTY.

One untested queen, 75c; 6 for $4.25; 12 for $8.00.

One tested queen, $1.25; 6 for $6.50; 12 for $12.00.

One 1-frame nucleus, $1.00; 6 for $5.50; 12 for $10.00.

One 1-frame nucleus and queen, $1.75; 6 for $9.00; 12 for $17.00.

Two, 3, and 4 frame nuclei, 65c per frame to above prices for extra frames wanted.

For each dozen queens or nuclei ordered at above rates I will mail in August a **SELECT TESTED QUEEN.**

ROOT'S GOODS at ROOT'S PRICES,

Plus carload rate freight.

Bees, Honey, and Beeswax bought and sold.

W. O. VICTOR,
Wharton, Texas.

Don't Buy
Supplies

Until you see my 40th annual catalog. A full line of hives and fixtures best adapted to our New England climate. Also best brands of **Comb Foundation and Section-boxes.** I have also made arrangements to keep quite a general stock of

A. I. Root Co.'s Goods at Their Prices.

Parties desiring these goods can get them of me, and **Save Freight Charges.** Bees, Queens, and Nucleus Colonies from the **very best strains** in America. A 40-page illustrated catalog free. Address

W. W. Cary,
Lyonsville, Mass.

I. J. Stringham, 105 Park Place, New York,

will gladly mail you an illustrated catalog of Apiarian Supplies upon request. Among the seasonable articles are Honey-cans, Shipping-cases, and Cartons.

Untested Italian Queens, 60 cents each; 1 dozen, $6.00. Tested Italian Queens, $1.00.

Apiaries, Glen Cove, Long Island.

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Honey Column.

CITY MARKETS.

CINCINNATI.—This market is completely bare of comb honey. The demand for extracted honey is good. Several good shipments from Mississippi and Arkansas have arrived, and found a ready sale at 6½@7½. No white clover on the market; same would bring about 8. Beeswax, 25@26

C. H. W. WEBER,
Successor to Chas. F. Muth & Son,
July 2. 2146-48 Central Ave., Cincinnati, O.

KANSAS CITY.—We have had a few shipments of new comb honey. No. 1 white comb sells at 15; No. 1 amber, 14; No 2 amber, 13. No new extracted in the market. No beeswax in market.

July 9. C. C. CLEMONS & CO.

CHICAGO.—Some new white comb honey is selling at 15; not much offered, and not much demand for it. Extracted is slow sale; best white, 7@7½; best amber, 6½@6¾; off grades, 5@5½. Beeswax, 27@28.

R. A. BURNETT & CO.,
July 7. 163 S. Water St., Chicago, Ill.

NEW YORK.—Comb and extracted honey in very poor demand on this market at the present time. A few small lots of comb honey arriving which is selling at 12@16, according to quality. Extracted we quote from 6@7. Beeswax scarce, 28@29.

CHAS. ISRAEL & BRO.
486 Canal St.

BUFFALO.—There has been just a little new comb honey in the market this season. Quality was good, and sold at 17@18. It will not sell as high as this very long.

July 12. W. C. TOWNSEND, Buffalo, N. Y.

WANTED.—Comb and extracted honey. Will buy your honey, no matter what quantity. Mail sample with your price expected, delivered Cincinnati. I pay cash on delivery.

C. H. W. WEBER, Cincinnati, Ohio.

WANTED.—Comb and extracted honey. State price, kind, and quantity. R. A. BURNETT & CO.,
163 South Water St., Chicago, Ill.

WANTED, HONEY AND BEESWAX.—We have a tremendous and growing trade in this line, and should like to hear from all having such goods to sell in any part of the country, with quantity, description, and lowest cash price.

THOS. C. STANLEY & SON, Fairfield, Ill.

FOR SALE.—Basswood honey, both comb and extracted. Write for prices, stating amount wanted.

ED. WILKINSON, Wilton, Wis.

Marquette, on Lake Superior,
is one of the most charming summer resorts reached via the Chicago, Milwaukee & St. Paul Railway.

Its healthful location, beautiful scenery, good hotels, and complete immunity from hay fever, make a summer outing at Marquette, Mich., very attractive from the standpoint of health, rest, and comfort.

For a copy of "The Lake Superior Country," containing a description of Marquette and the copper country, address, with four (4) cents in stamps to pay postage, Geo. H. Heafford, General Passenger Agent, Chicago, Ill.

FACTS About Bees.
REVISED EDITION.
How to get
GILT-EDGED HONEY
Send 2c stamp to
THE A. I. ROOT CO.,
Medina, Ohio,
or F. Danzenbaker,
Box 66, Washington, D. C.

Adel Bees Did it.

San Louis, Col., March 2, 1900.
Last spring (1899) I ordered queens from 5 different queen-breeders, and among them one from you. The bees from your (Adel) queen gathered more honey than the others all put together. (Signed) S. N. Smith, M. D.

Send for descriptive circular and full price List. Tested queens, each $1.50.
HENRY ALLEY, : Wenham, Mass.

SUPERIOR HONEY QUEENS. Bred from our superior strain of Italian Queens. Untested, each, 50c; ½ doz., $2.75; tested, $1.00; ½ doz., $5 00.
LEININGER BROS., Fort Jennings, O.

ITALIAN BEES and QUEENS FOR SALE
Queens, $1.00; bees, by the pound, $1.00; nuclei, two frames, with queen, $2 00; one frame, $1.50; full colonies, $4.00.
MRS. A. A. SIMPSON, Swarts, Pa.

Italian Queens. Tested, $1 00 each; untested, 50 cents each. Satisfaction guaranteed. **E. W. HAAG, Canton, O.**

American Poultry... Journal. 25c 1 Yr.'s Trial Subscription 25c
AMERICAN POULTRY JOURNAL,
— Room 500 —
325 DEARBORN STREET, CHICAGO.

FOR SALE.—Barnes combined improved saw-machine with one ⅜ and one 1 inch cutter-head; 3 cut-off and 1 rip saws. Price $15.00 f. o. b. cars at Kinzua, Pa. JAMES S. GREEN, Kinzua, Pa.

QUEENS, daughters of imported mother, 50c.
Hybrid queens from my out-apiaries, 25c.
This will not appear again. Govern yourself accordingly. J. B. HAINS, Bedford, Ohio.

Sharpless Cream Separators—Profitable Dairying.

Special Notices by A. I. Root.

SEEDS AND PLANTS SUITABLE FOR JULY PLANTING.

Wax beans will be all right for table use, and with favorable weather they may produce ripe beans. The best prices we can make at present are 20 cts. a quart; York State and white kidney beans, 15 cts. a quart. The above prices are above those given in our price list, owing to the scarcity of good seed.

WINTER OR EGYPTIAN ONION-SETS.

These are now ready to begin to set out; in fact, this is the best season of the year to put them out, in my opinion. Price, quart, 10 cts.; 50 cts. a peck; bushel, $1.50. We have both large-sized and small-sized sets. The small ones will, of course, give you a greater number of onions; but the large ones will give you stronger plants. This kind of onion never fails to grow, is never winter-killed, so far as I can learn, and it will hold its own year after year, almost in spite of weeds or any thing else.

WHITE AND YELLOW MULTIPLIERS.

These never run up to seed, but simply divide and multiply. The yellow ones are sometimes called potato onions. Quart, 20 cts; peck, $1.00; bushel, $3.50. These are for the small ones; large size, one-half the above prices. Either kind may be planted in the fall.

TOP OR ACORN ONION SETS.

These are also now ready to harvest; but I believe that, as a rule, they are not set out till spring. One reason for purchasing now is that they are almost always sold out before spring, and we have grown only a limited quantity this season. Prices, same as for the multiplier sets.

TURNIPS.

Now is the time to put in all kinds of turnips. We have Yellow Aberdeen, White Egg, Breadstone, and purple white-top Globe. Any of them, 5 cts. per ounce; 30 cts. per pound; 5 pounds for $1.25.

CRIMSON OR SCARLET CLOVER.

From now on, for the next 60 days, is the best time to put in crimson clover. Where put in in good ground at this season of the year, with buckwheat or by itself, it rarely fails to winter over. Prices: Bushel, $5.50; half bushel, $3.00; peck, $1.75; 1 lb., 10 cts.; 1 lb., by mail, 20 cts.

BUCKWHEAT.

From now on till a month later is just the time to put in buckwheat. We have a fine lot of Japanese at $1.10 per bushel, or two bushels or more at an even dollar a bushel, sacks included. We have also succeeded in getting seven bushels of silverhull buckwheat. For several years past we have had calls for this, and could not furnish it. The largest yield per acre we ever secured was with the silverhull. The price is the same as for the Japanese.

DWARF ESSEX RAPE.

This is also just the season for the above. We have a nice stock of seed at 10 cts. per lb.; 50 lbs. or more, 9 cts.; 100 lbs. or more, 8 cts. per lb. We can mail a leaflet in regard to its cultivation, on application.

POTTED STRAWBERRY-PLANTS.

So far as I can learn we are the only strawberry-growers in the world who send out potted strawberry-plants *by mail postpaid*. We do it, as I have frequently explained, by potting them in jadoo fiber. We expect the plants to reach you just as bright and fresh as they are when first taken out of the garden; and if put out in good soil they should take right hold and grow at once, put out new runners, and give you a nice crop of beautiful fruit next season. Of course, the ground must be rich, and you must keep the weeds away. The sooner you get them, the more chance they will have to grow this fall.

They are now ready to send out at 3 cts. each, or 25 cts. for 10, by express; or 5 cts. each, 40 cts. for 10, by mail. The following is our list of standard varieties:

OLD STANDARD VARIETIES.	NEWER VARIETIES.
Jessie.	Rio.
Haverland (Imp.).	Marshall.
Bubach (Imp.).	Wm. Belt.
Warfield (Imp.).	Margaret.
Sharpless.	Nick Ohmer.
Parker Earle.	Brandywine.

The new berry called New York will be double the above prices. This is much like the Sharpless, fully as sweet, and of rather better shape.

SPECIAL NOTICES BY BUSINESS MANAGER

DELAYED IN STARTING.

"The best laid plans o' mice and men gang aft aglee."

Owing to the big fire in Hoboken at the docks of the North German Lloyd S. S. Co, June 30, in which the Saale was burned, my starting for Europe has been delayed fifteen days. I go now on the "New England," of the Dominion Line, sailing July 18 at 2.30 from Boston to Liverpool, and hope, before returning, to attend the international bee congress in Paris in September.

WANTED, COMB AND EXTRACTED HONEY.

We can use large quantities of comb and extracted honey, and should be pleased to have our subscribers advise us by return mail how much they have to offer. In writing us, please observe the following: Do not mix this up with any other matter you may be writing about. Tell us about how many pounds of each grade of comb and extracted you have, and from what source or sources gathered.

What size shipping-cases do you use? What packages for extracted honey? Send sample of extracted by mail. At what price do you hold it? Name price delivered at Medina if you can. Let us hear from you promptly. If we can not use your honey we will refer you to some one else if possible. Parties who have not secured sufficient honey for their home market will do well to write us. Often we can refer you to some one near you who has honey to sell, or make you a shipment direct from some of our customers near you.

KIND WORDS FROM OUR CUSTOMERS.

PLAIN SECTIONS COME TO STAY.

The Corneil smoker is a dandy. Your extra thin foundation is beautiful, but my bees cut it down badly; but it may be owing to the poor season. I think I prefer a little heavier side wall. I am trying the plain sections and fences, and think they have come to stay. I have about 2000 partly filled sections, none finished; but I am master of the situation, and will have them all finished off in a short time. J. E. HAND.

Wakeman, O., July 9.

[We do not recommend the extra thin foundation, for the very reason that bees are liable to gnaw it down. Still we furnish it, because many will have no other. In a good flow it will not be gnawed; but one never knows whether the season will be good or bad. —ED.]

OUR BOOK ON STRAWBERRY CULTURE.

It is so seldom we hear direct from our old friend T. B. Terry I am sure our friends will be interested in the following, even if it was not intended for print:

Dear Mr. Root:—Allow me to inclose one of the many kind letters I receive. We are jointly interested in this one. I met this young friend, and tried to wake him up a little. I want to thank you most heartily for the chance you gave me to reach thousands of friends and enthuse them a little, thus making their lives more full. I've just returned from six weeks in Minnesota, at institutes. T. B. TERRY.

Hudson, O., June 28.

The letter he incloses and alludes to we give below:

My dear friend Mr. Terry:—You remember the last time I was with you was at the institute at Clifton Springs Sanitarium. Now, that institution has been taking our large fine-flavored strawberries and paying me my own price, 13 to 15 cts. a quart. We live 11 miles from there, and I am up at 4 o'clock and am there at 7, and before breakfast, and am back home by 10. I go along the road past our neighbors before they are up. Your little strawberry book has been worth hundreds of dollars to me. I can not begin to supply them, as they use 10 crates or bushels a day. I could get a good job there just growing fine strawberries for them, but am busy, and have a good job now working for my own interest. I will write and tell you about our crops later on. Our berries bring us about $110 a day in the beginning.

Alloway, N. Y., June 21. CHAS. VANDERBILT.

Selection.

Selection has been the chief factor in the development and building up of our improved breeds of horses, cattle, sheep, swine, and poultry. Men have devoted the best years of their lives to a single line or branch of this work—and not without their reward. In bee-keeping but little has been done in this direction. The development of a bright yellow bee has been the most noticeable thing that has been done in this line. This is the most easy of accomplishmant, as results are so quickly and easily discernible. To breed for honey-gathering qualities is a much slower process. As soon as bees hatch out we can decide in regard to their color, and as to whether we wish to rear queens from their mother for the purpose of improving the color of our stock; to decide in regard to their working qualities requires months—perhaps years.

Every experienced bee-keeper must have noticed how much more surplus is stored by some stocks than by others. Time and time again, when visiting bee-keepers, have I been shown some particular colony, and heard the owner tell with pride how much honey it had stored year after year; always coming through the winter in good condition, or doing this or that that was so desirable. The strange thing is that bee-keepers so seldom seem to realize the value of such a colony, or queen, as a starting-point from which to improve the stock of their whole apiary. If they do realize it, they seldom take advantage of the knowledge. Suppose, by the introduction of improved stock, a man can increase his surplus, on the average, one year with another, ten pounds per colony, and that is not an extravagant estimate, on 100 colonies his crop would be increased 1000 pounds The cost for hives, grounds, labor, wintering, etc., is nearly the same with one kind of stock as with another, just as it costs as much to keep a scrub cow as it does to keep a Jersey, and a gain in surplus that comes from improvement in stock is the most profitable that can be secured. To improve your stock, get the VERY BEST that you can for breeding purposes, and with this stock your apiary; then watch carefully, and breed from the colonies that do the best. Continue this year after year, and you will be surprised at the results.

This matter of beginning with as good stock as you can get, is all-important. Don't lose years of time by commencing with common or inferior stock. Get the best; and thus be able to commence right where some other breeder left off.

As explained in previous advertisements, I am selling queens from stock upon the development of which a good man has spent twenty years; making crosses, and then each year selecting the best to breed from. I have several times tried this strain, and know it to be the best that I have ever tried.

The price of these queens will be $1.50 each. This may seem like a high price, but the man who pays it will make dollars where this breeder and myself make cents; and when you come to read the conditions under which they are sold, it will not seem so high. The queens sent out will all be young queens, just beginning to lay but, as there are no black bees in the vicinity, it is not likely that any will prove impurely mated. If any queen SHOULD prove impurely mated, another will be sent free of charge. Safe arrival in first-class condition will be guaranteed. Instructions for introducing will be sent to each purchaser, and if these instructions are followed, and the queen is lost, another will be sent free of charge. This is not all; if, at any time within two years, a purchaser, for any reason WHATEVER, is not satisfied with his bargain, he can return the queen, and his money will be refunded, and 50 cents extra sent to pay him for his trouble. It will be seen that the purchaser runs NO RISK WHATEVER. If a queen does not arrive in good condition, another is sent. If he loses her in introducing, another is sent. If she should prove impurely mated, another is sent. If the queen proves a poor layer, or the stock does not come up to the expectations, or there is ANY reason why the bargain is not satisfactory, the queen can be returned and the money will be refunded, and the customer fairly well paid for his trouble. I could not make this last promise if I did not KNOW that the stock is REALLY SUPERIOR.

I said that the price would be $1.50 each. There is only one condition under which a queen will be sold for a less price, and that is in connection with an advance subscription to the REVIEW. Any one sending me $1.00 for the REVIEW for 1900 can have one queen for $1.00; that is, I will send one queen and the REVIEW for 1900 for only $2.00; and in addition I will send 12 back numbers of the REVIEW free. Just see what you can get for only $2.00: 12 back numbers, the REVIEW for all of 1900, and one of those superior queens. I can now fill orders for these queens of Superior Stock by return mail. This is something that I have never before been able to do.

W. Z. Hutchinson, Flint, Mich.

THE VERDICT

of my customers proves that my efforts to furnish queens of unusual merit are not in vain

"The 19 queens purchased of you last month came promptly as ordered; and to say that I am pleased is putting it mildly; they are the largest and finest I ever saw, and all *exactly* alike. My future orders will surely be placed with you.
A. T. DOCKHAM, Wells, Minn., July 5."

"The queen you sent me on the 20th ult. came the 23d all O. K., not one dead bee in the cage. To say I am pleased with her is quite mild. I would not take her out of the hive to-day for $5 00
S. C. Frederick, 'Evergreen Apiary,' Elberton, Wash., July 2."

When you want queens that please *every tiwe*, send me your orders for the "Superior" Doolittle cross. 75c each; $2 00 for 3; $7.50 per dozen.

JEWELL TAYLOR, Forestville, Minn.
Money-order Office, Spring Valley.

Queens, Nuclei, and Colonies.

Best of Honey Queens. Special prices to introduce during July, Aug., and Sept Untested queens, 50c each; $5 50 per doz. Tested, $1.00 each Nuclei, add 50c per frame to price of queen. Write your wants. Satisfaction guaranteed.

S. P. CULLEY, Higginsville, Mo.

Queens on Trial.

In 1895 Mr. L. M Brown, 218 Tenth St., Sioux City, Iowa, bought 3 queens; in 1897, 12 queens; in 1899, 80 queens; this season, 95, all for his own use. Many of my customers of this year have bought queens from me for years, and tested dozens, scores, or hundreds of them. This means that the queens are GOOD ones, and satisfactory. We are now over our *rush*, and can fill orders for the BEST OF QUEENS *promptly*. Queens are carefully reared from one of Doolittle's best mothers. Cells are large and well fed; queens sent out are large fine ones that lay well. Any injured in transit, or unsatisfactory, replaced free. To induce a trial we make these prices: One queen, 60 cts.; 3 or more, 50 cts. each; select warranted, 80 cts.; extra select warranted, large yellow, $1.00; nice tested, $1.00; select tested, $1.50. A few nice young tested mixed, 3 to 5 band, from swarms, 75 cts. each. See ad's and circulars.

J. B. CASE, Port Orange, Fla.

BIG HONEY CROP

Means good bees. Many of my colonies have stored 200 lbs. each from red clover. Untested queen, 65 cts.; 2 for $1.00. Tested, $1.00.

G. ROUTZAHN, Menallen, Pa.

QUEENS of the Doolittle Case strain. These bees are industrious, prolific, and gentle. Try them. Untested, 50 c ts. each; $5 00 per doz.; select, 75 cts.; young tested, $1.00, or 3 for $2.50; select tested, $2.00.

GEO. VANDE VORD, Daytona, Fla.

Wm. A. Selser, Honey Expert,

Office of The A. I. Root Company.

10 Vine St., Philadelphia, Penn.

We have in stock about 100 second-hand 60-pound cans, two in a case. Cans sound and in good condition, cases a little soiled; will sell, while they last, at 35 cts. a case.

Headquarters for Bee-keepers' Supplies in Chicago.

DON'T FORGET THAT

When you are needing anything for the care of your bees or honey.

Shipping-cases and 60-lb. Tin Cans.

We have a good supply of SECOND-HAND 5-gallon (60-lb.) cans, which are practically as good as new. Prices while they last—10 boxes of two cans each, 50 cts. per box; 20 boxes or over, 45 cts. each; 100 boxes, 40 cts. each. New cans are almost twice these prices.

Send for FREE CATALOG and sample copy of the weekly American Bee Journal.

Address

GEORGE W. YORK & CO., 118 Michigan St.,
CHICAGO, ILLINOIS.

1881 1900

PAGE & LYON MFG. CO.

We manufacture a full line of the latest BEE-SUPPLIES.

Our motto is, "Perfect Goods and Prompt Shipment."

Send for our new free illustrated catalog.

PAGE & LYON MFG. CO., New London, Wisconsin.

GLEANINGS IN BEE CULTURE
A Journal Devoted to Bees and Honey and Home Interests.
Illustrated Semi-Monthly
Published by The A. I. Root Co.
$1.00 per Year Medina, Ohio.

Vol. XXVIII. JULY 15, 1900. No. 14.

STRAY STRAWS FROM DR C. C. MILLER

I USED to tip back a hive and pour feed into the bottom-board, but gave up the plan after careful observation showed many dead bees thrown out next morning. The Victor plan, p. 517, is probably a great improvement, and free from disaster, as the bottom-board is shallow, and the bees can help themselves without leaving the bottom-bar.

I DON'T THINK that Harry Lathrop's testimony, p. 528, shows that winter-passages are unnecessary. Notice that he doesn't say he wintered without such passages, but his testimony dates from "this spring, when I placed the bees on the summer stands." After that time they were not confined to the hive long enough to make the lack of passageways dangerous. [By looking over Mr. Lathrop's article again, I see that your point is well taken—that is, he does not offer any testimony against bee-passages *in winter*.—ED.]

STENOG is rather hard on the man who made a business of killing bumble-bees, page 471. All depends on the point of view. Stenog looks upon the bumble-bee as the useful insect that fertilizes red-clover blossoms and makes possible a crop of clover seed, so feels like calling any man names who kills them. Bro. Ritchey looks upon it as the little beast that stings horses attached to reapers and other implements, making possible runaways that result in the cutting-off of arms and legs, and from that point of view feels justified in waging a war of extermination, just as he would against mice and bedbugs.

J. N. RITCHEY writes: "Last spring, May 10, I sowed sweet clover, and find it in bloom June 25. So you see if it is sown in early spring it will bloom the next season; but if left to reseed itself the last of July or August, it will not bloom the next year." If you mean blossoms appeared June 25 from the sowing of May 10, *1900*, that would make it an annual, and I should suspect there was some mistake. If the sowing was May, 1899, then I should expect it to bloom in 1900. Moreover, I should expect it to bloom in 1900 if growth started *any time* in 1899, even later than August. Always, it starts growth one year and blooms the next.

THE PROPORTION of soiled sections with A. E. White in a good season is not more than ten per cent less, he thinks, than at Medina, p. 530. That sets me to wondering whether there may be some reason for soiled sections different from the reasons that prevail here. No ten per cent are soiled here, and not one per cent would be soiled if the sections were always taken soon enough. The sole cause for soiled clover sections is staying too long on the hives. [There is no doubt that the locality has a good deal to do with the amount of soiled sections. A very slow moderate honey-flow will result in a larger percentage of soiled boxes than where the reverse conditions are at work.—ED.]

DON'T QUARREL with Abbott Clemens about slow work dampening sections, so long as neither takes more than 40 at a time. I don't like to take less than 200 at a time, and prefer 500. [It is not our custom to dampen only 40 sections and then fold and get up from the chair for more. We grab up a handful, dampen them, and set them down. We then pick up another handful, dampen these, and place them alongside of the first lot until we have the required number of sections to be folded, be they 200 or 500; then we set down to fold. Your way of putting 100 or 200 in a row, and then dampening them all at one time, may be quicker, however; but the difference in time in either case would be very small, I suspect.—ED.]

"A GREAT RESTRAINER for swarming is a frame of unsealed larvæ. A comb of *capped* brood is not nearly as good." So I thought, but I'm skeptical now. From the same colony, take a frame of unsealed brood and another of sealed brood, put them in two different hives with their adhering bees, and see which will be deserted first. [I have changed my mind once or twice on this subject. Years ago, when swarms used to leave the hives I hived them in, father would come out in the apiary and say, "You omitted to put in the frames of brood." "Oh, yes! I did put in the brood;" but he showed me it was *sealed*. A few days afterward I put in unsealed larvæ in one or two colonies, and the bees left just the same. I then concluded that the age of brood had nothing to do with it. Later observations seemed to lead me very gradually to believe that unsealed brood was a good deal more of a restrainer than sealed, hence my advice as given in GLEANINGS.—ED.]

YOU ASK, Mr. Editor, whether I tramp for, or beg for, cotton waste for smoker fuel. There's an Irishman who's been working on the railroad for years, and I've always had a pleasant word with him without knowing why. Now I know why, for he's now flagman at the railroad crossing; and as I drive across he hails me, and tells me where to find a little pile of cotton waste. [It pays to cast our bread on the waters, although we may not know when it will come back. As to the cotton waste, I suspect that tons of it could be had at a very small expense, and I have no doubt our Irish friends would be glad to supply any amount of it for a small consideration. It has served its purpose to the railroad company, and of course the latter has no further use for it.—ED.]

"I SUSPECT it was Willie Atchley who first thought of the scheme of transferring cocoons into small-bottom cell-cups," says ye editor, p. 469. Certainly, I supposed all understood that, as Pridgen in his pamphlet distinctly gives him the credit. Then to Pridgen we are indebted for taking up the matter at that point, and, instead of making a single cell at a time, and transferring the cocoon with tweezers, making cells "by the peck," and using a transfer-stick, which quickly sets the cocoon in place and beds it down smoothly into the cell, so the bees think it grew that way. [A. I. R. tells me that you are making a great success in raising cells *a la* Pridgen. I am rather inclined to believe that Mr. Pridgen is the most up-to-date queen-breeder in the United States. He has picked out all the best methods, and improved on them, and virtually made a new system. Yes, he has gone ahead of Doolittle, the Atchleys, and the whole of them.—ED.]

IN MY BARN is what I've been trying to get for years, a ton or so of pure sweet-clover hay. My horses will eat green sweet clover very gingerly, but will come at call out of the pasture and eat the dried sweet-clover hay greedily. They eat off all the finer parts, leaving the coarse stalks. Then I throw these coarse stalks down stairs in the basement, to which the horses have entrance at pleasure from the pasture, and the stalks are mostly eaten up. [A. I. R., who has now returned from your place, has been telling me how your horses, on being given a choice of oats in the manger and sweet clover in the mow, went to the latter and helped themselves. He was not perfectly sure they knew of the oats, but he said they evidently regarded it as "a great snap" to be invited to browse that fine sweet-clover hay. You do not tell us at what age you cut this clover; but I should presume it was before it got much in bloom. When the plants are young and juicy they will give the best hay. If just as good hay can be made after the plants have gone to seed, or, rather, have ceased yielding nectar, then we should consider that quite a point in favor of the bees as well as the horses.—ED.]

SAY, aren't you folks at Medina just a bit "sot" in the matter of cell-cups? or do the bees act differently there? I can't begin to get as many cells accepted with big bottoms and jelly as with cocoons. Then there's the trouble of getting jelly and stirring it up to the right consistency, when with the cocoons each larva has its own jelly just exactly of the right sort. You say you don't like "to slice across a brood-comb, mutilating larvæ of all ages, and young bees." Neither would I. Nor do I that thing. With a queen up to her business, or a litttle management in giving occasionally a fresh comb or one with bees hatching out solid, an inch or two square can be cut out to give you 50 to 200 cocoons, and you can put a patch in place of the piece cut out. There's less labor with the cocoons "in this locality." [If there is any one who is "sot" in the matter of cell-cups it is our queen-breeder Mr. Wardell, and not your humble servant. I have been trying to show him the superiority of the Pridgen method; but when Mr. Wardell produces such fine queen-cells, and in such quantities, by using ordinary drone comb, it is a pretty hard matter to buck against the logic of such facts; and yet I have an inward feeling all the time that, if he understood the Pridgen method as thoroughly, he would do even better.—ED.]

A PRETTY WAY that is for you to talk, Mr. Editor, p. 537: "Trot out your glossometer," when you know I haven't any glossometer, just because I never could get you to make one. But I'm not so sure that measuring tongues is as good as measuring the crop stored by different colonies. But I must say that my bees work red clover more than years ago, but not to an alarming extent yet. [Trot out your glossometer—why, what is the matter with that? You were always wanting me to make one, when in fact I did not know how. You made a diagram, but about that time I lost faith in the scheme. But there is a glossometer made by an Englishman that is used at the Michigan Experiment Station at Lansing; and I would say to any who have extra long-tongued bees to send specimens of them to that station, which will, I think, be glad to render a report. But with regard to long-tongued bees, perhaps it may be more feasible to direct our efforts toward *short-tubed red clover*. See Prof. Green's article in the editorial department, this issue. The more I think of it, the more I believe he is on the right track. If we follow both of these—stretching, so to speak, the tongues of the bees and shortening the tubes of the clover, we may be able to arrive at the proper solution of the whole trouble, and that right speedily.—ED.]

A FOOTNOTE, p. 522, says, "We have heretofore assumed that larvæ just hatched, or larvæ not more than 3 days old, was the preferred age; but here is a case where the bees evidently had a preference for the five-day limit." I think you misinterpret, Mr. Editor. The bees took larvæ five days out of the egg, not because they preferred such, but because they had nothing younger. I've no sort of an idea you could get them to start royal cells over larvæ that had been fed more than three days if any thing younger was present; and I don't believe they would of choice take any thing more than *two* days from the egg. [I do not think I misinterpret you, doctor; but perhaps you misinterpret me. Quoting from the footnote under consideration I said, "What surprised me. . . was that the bees should have apparently *waited so long* before starting the *bulk* of the cells." Note the italics which I have added to make the quotation better understood. Now, if the bees preferred an earlier age, why didn't they start the bulk of them at the proper age limit instead of waiting two days *after* the limit? for, according to what you say, the bees were building cells all the time; but they "seemed especially desperate in the matter when the age limit had been passed some two days." And a little further up you speak about two cells that were started with larvæ of the proper age. Now, to reiterate, why didn't the bees start 16 cells at the proper age, instead of only 2? but it appears they waited till 2 days *after* the proper age.—Ed.]

About that stinging business, Mr. Editor, if you'll stop getting mad I'm ready to tell all I know. I know that many a time the dart is so sudden and swift that the first I know about it is the sting. Then sometimes a bee will fumble around time enough so I can kill it before it stings. Sometimes it fumbles awhile, and then seems to change its mind about stinging. Sometimes it fumbles awhile, and I say, "Oh! fool away if you want to, I know you don't really mean to sting," and then the little vixen will up and sting just for spite. But when that lightning dart comes, I'm really on the fence to know whether it can first have time to feel where it stings. For a sufficient consideration I'm ready to believe either way. [There, your experience is exactly my own after all; but I am not "on the fence" as you are. After one has been punched in the eye by a mad hybrid that has suddenly darted from the hive and struck with its sting, feet and all, in a very small fraction of a second, I do not see how any one, much less yourself, could be on the fence, or, rather, be in doubt as to whether the bee *had time to feel* before it stuck in the sting. If you should suddenly, in a fit of anger, hit me in my eye with your fist, I do not think that, when I appeared against you before the court with a charge of assault and battery I would swear that you "felt around" before delivering your blow. "Allee samee," I am not afraid of being hit; for as soon as I can I am going to pay you another visit, for A. I. R. came home all enthused on the subject of bees, and especially Pridgen's method of rearing queens.—Ed.]

PICKINGS

FROM OUR NEIGHBORS' FIELDS.

BY STENOG.

Torrid days and chilly nights,
Lightning's flash and thunder's bang;
Rains and windstorms, clouds and fogs,
Warring, jarring, angry gang.

AMERICAN BEE JOURNAL.

Mr. J. R. Schmidt, of Cincinnati, contributes an interesting article on yellow sweet clover and sweet clover in general. He says:

> The honey-producing qualities of the yellow sweet clover can not be excelled if ever equaled by any other plant, excepting the white sweet clover. The following little instance will serve as a good example:
>
> The past early spring and up to the last of May I practiced uncapping sealed honey and spreading brood almost to an extreme, and as a result the hives were crammed full of brood with little or no honey. Then came a spell of very disagreeably cool, rainy weather, with the bees confined to the hives almost entirely for 5 days. At the end of this time all the honey was consumed, and they were actually beginning to starve. The prospects for buying several dollars' worth of granulated sugar were excellent, but on the sixth day the clouds all cleared away, the weather warmed up, and the bees began to work desperately upon a small patch of this yellow clover along a railroad track. As this was the only thing they were working on I thought the sugar had to be bought any how.
>
> But I waited two days longer, trusting to luck that they would at least work upon the profuse bloom of white Dutch clover that was now in bloom; but every bee seemed to make a bee-line for this yellow clover, and it fairly swarmed with them. Late in the afternoon of the second day I took a peek at some queen-cells that I expected to hatch, and you can imagine my surprise on seeing the top part of each comb more or less filled with *new honey*. Now, I know this came from the yellow clover, because it was so black and dirty. I first thought it was stored on top of pollen, but this was the color of the honey, and was caused by the soot and dirt falling on the blossoms from passing trains.

In conclusion Mr. Schmidt says, "Do not spend money on white Dutch clover."

AMERICAN BEE-KEEPER.

New South Wales, Australia, is reported to have received recently a consignment of bumble-bees from New Zealand. They came originally from this country, and were imported as pollinating agents.

* * *

Some time ago Col. Viete, of Cuba, was reported as having produced 360,000 tons of honey in one year. This should have been pounds and not tons. The error was too great to be misleading.

BRITISH BEE JOURNAL.

An interesting feature of this journal is a fine view every week of an English apiary. At the Royal show of bees and honey at York, the Prince of Wales and the Duke of York were interested spectators. Mr. Carr laid a section-case containing the queen on the top of a frame hive near at hand, while the driven bees were shown in the hive, and their subjugation and disinclination to sting were demonstrated by the bees being taken up in handfuls. The Duke of York having inquired in what way the bees were removed from the hands, and, being shown the usual method of jerking them off by a downward shake, the Prince of Wales jocosely observed, "And a very good way too." It would be a rare sight in the United States to see one so high in rank as the Prince taking any interest in such things.

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Mr. M. G. Dervishian, of the island of Cyprus, makes a vigorous defense of the Cyprian race of bees, as to their hardiness and good qualities in general. He says the French authorities have pronounced the Cyprians to be "the bee of the future."

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In view of what has been said about bringing bees *from* India, one reads with interest what Mr. F. L. Sladen, of Ripplecourt, England, has to say in regard to taking bees from England *to* India. Perhaps nobody living is better prepared to speak on this question than Mr. Sladen, whose travels seem to have been very extensive. He says, "Bees have been sent successfully to India on several occasions, but the conditions do not seem to favor them, and sooner or later they become weak, dwindle, and die. Failure has generally been attributed to the bees' inability to resist the attacks of various birds and insects which prey on them and reduce their numbers faster than they can be maintained by breeding; but probably faulty management has also had a good deal to do with it. The chances of success are greater in the hills than in the plains." Concerning the time of carrying the bees to India, Mr. Sladen says: "In attempting to take a swarm of bees to India there would have to be considered, besides the long and trying journey, the risk of bringing them successfully through the heat of the Red Sea. October is the hottest month in the Red Sea. In a swarm of Himalayan bees I brought home from Darjeeling in February (the coolest month in the Red Sea) the deaths that occurred during the two days after we left Aden amounted to nearly half of the total loss of the three weeks' voyage between Calcutta and Marseilles. On the whole I should recommend one not to attempt to do any thing with English bees in India, but to try the native bees and take out only the hives and appliances as are best got in England." As to the kind of bees that can best be reared in India, Mr. Sladen says: "The only bee at present admitting of cultivation is *Apis mellifica*, variety *Indica*, various races of which occur in the hills and plains, and in Ceylon. It may be known roughly from honey-bees unsuited to cultivation by its medium size. The large bee *A. dorsata* (about $\frac{5}{8}$ in. long), and the small bee *A. florea* (about $\frac{5}{16}$ in. long) both of which build their combs *out in the open* from boughs of trees and shrubs or from overhanging ledges of rocks, should be avoided except for experiment." In writing on this subject, Mr. W. Horsfall says: "There should be no difficulty whatever in taking bees from England to India. A better time than October, when the English bee activities are over, the queens having generally ceased laying eggs, could not be."

GENERAL CORRESPONDENCE

RELATIONSHIP OF BEE-LIFE TO AGRICULTURE.

Are Bees Attracted to Flowers by the Color they Possess?

BY F. GREINER.

For the benefit of the readers of GLEANINGS I will give in the following a synopsis of an address delivered before the Australasian Association for the Advancement of Science, by Prof. Albert Gale, on the subject of "Color of Flowers, and its Influence on Bee-life." As far as practical and advisable I will give the professor's own words. Some things may not be new to the readers, but it will help to show them the state of affairs over there.

"As I proceed I think I shall be able to show that bee-life and blossoms are so closely associated that, to interfere injuriously with either, will at the same time injure both. Animal life can not exist without the vegetable kingdom. Some forms of vegetable life *can* exist without the presence of animal life, but others would cease to exist without the presence of some forms of insect life. Nearly all insects aid more or less in fertilizing the vegetable kingdom.

"Pollen is the fertilizing and vitalizing agent in reproducing all classes of vegetables. It is produced in abundance by all flowering plants, both by those of conspicuous and inconspicuous blossoms. *As a rule, inconspicuous flowers are wind-lovers, and those of more gaudy tints are insect-lovers.* It may not be generally understood that there are male and female elements in the vegetable organism just as in the animal organism. Agriculturists and those engaged in vegetable culture do not as a rule know that plants are reproduced on precisely similar lines as animals. Not one out of a thousand has sufficient knowledge of his occupation to understand that there exists a sexuality in plants, and that fertilization is as necessary in plants as in animals The one great aim of all vegetable and animal life is to reproduce its species. Both sexes in all the higher orders of animal life possess locomotive powers to enable them to come together for procreative purposes. Locomotive powers in plant life are very rare.

"The higher orders of animals are uni sexual; occasionally there are malformations termed hermaphrodites; but in the plant world the higher orders are uni-sexual, bi-sexual, or hermaphrodites — uni sexual when the male and female organs are on separate plants; bisexual when male and female organs are in separate flowers but on the same plant; hermaphrodite when the procreative organs are both on the same blossom. Yet, nevertheless, *no true flower is hermaphrodite.* To make it clearer, the receptive and distributive organs do not mature at one and the same time in the same flower. From this it will be seen how utterly impossible it is in the great majority of cases for the anther to fertilize its associated stigma.

"In nearly every case the pollen of insect-loving plants is not dry and powdery, as in the case of wind-loving flowers, but is heavy and adhesive. Its adhesive nature prevents it from being blown about by winds, and it becomes necessary for an outside agent to transmit it from the male to the female organs."

Now comes the question, Are bees attracted to blossoms by their color? and are certain bright colors—red, blue, purple, etc., more attractive to them than paler tints, such as white-yellow? This my experience most certainly contradicts, although it has so been stated by high authority. I quote from Sir John Lubbock's work on "Bees, Ants, and Wasps:" "I brought a bee to some honey which I placed on blue paper, and about three feet from it I placed a similar quantity of honey on orange paper."

Why he needed to place a similar quantity I can not tell; and why he should have *brought* a bee instead of allowing one to find it, is a problem I can not solve. "The question now is, 'Was the bee attracted by the color of the paper or by the honey?' Last summer in my garden I had a scarlet dahlia in bloom. When it first flowered there was not a stamen present. No bees ever visited it" (to the professor's knowledge). "The plant was afterward neglected by me, and this neglect caused the stamens to appear and the pollen to mature. With this change in the flower it soon became a foraging-ground for the bees. Why did they not visit the early blooms? Because there was no bee-food present. Why did they visit it after the stamens appeared? The flowers were not nearly so conspicuous as the earlier bloom. But in passing over they saw there was a reward for their labor. Early last spring the white arum lily was in bloom, and its white pollen was eagerly sought for by the bees. At the same time the broad beans were in full flower. These, too, were an attractive foraging-ground for the same insects. A little later the peach-tree burst into flower, with the result that the first named was entirely forsaken, and the latter receiving only an occasional visit. Did the bees go to the peach-blossoms on account of their attractive colors? Not a bit of it. While the peach trees were in flower the willows were just showing their catkins. During the bloom of peach and willow my bees were bringing pollen of the two colors only—creamy-white and orange tint. At the same time were roses, marigolds, arum lilies, and other attractive flowers in bloom, but few bees visited them. The pollen was coming from the peach and the willows. The catkins of the willows are so inconspicuous that a large number of people are ignorant of the fact that they are blossoms; yet they were as attractive to the bees as the gaudy peach.

"During the same spring I visited the botanical gardens. There were then beds of English daisies, pansies, anemones, and the turban ranunculus, in full bloom. Nothing in the garden was more showy than the two

"OH, OH! OCH, OW, OW! PLAGUE TAKE THAT BEE."

See Editorial.

latter, yet not a bee visited them. Near these was a shrub (*Buxus sempervirens*) in which there was a constant hum of bees. What was the cause? Hidden among the dark-green foliage were hundreds of small greenish flowers supplying abundance of food. If color had been the attractive agent, bees would have never discovered their food in the shrub, but would have sought the showy beds of anemones, etc., in vain; they were double, and therefore there was no bee-food. A short time afterward I saw the bougainvilleas aglow with their showy bracts. They could be seen hundreds of yards away. At the same time the pittosporums were in flower, which were most inconspicuous. In the former there were no bees to be seen, notwithstanding their fiery glow, whilst in the latter there was a sound as though a swarm of bees had taken possession of it. Watch a large bed of poppies of mixed colors. No one color is neglected by the bees. Poppies are great pollen producers." (I am obliged to omit a great many more of these observations of the professor, on account of lack of space. They are all in the same line. —F. G.)

"Darwin tells us that it took ages on the other side of the world for flowers to develop, and the bees centuries to adapt themselves to the flowers. The chief honey-yielding plants of this continent are the eucalyptus, pittosporum, and tea-tree families. All these bear whitish flowers. Our introduced fruit-trees and ornamental flowering plants bear brightly colored blooms. In springtime our introduced fruit-trees are conspicuous by the multiplicity of their flowers, and our little native bees as readily find the nectar in them as our introduced bees, and they can not have had ages of experience to guide them. And does it not seem very strange that our hive-bees, upon their introduction here, should have forsaken the bright-colored flowers of the old land that were introduced here at the same time they were? The hive-bee, on its arrival here, after having been educated to the high standard it is said to have attained in the Old World, works upon, not our introduced flowers, red, blue, purple, so much as upon our simple white and yellow ones, so unlike what they ought to have done according to the education they received at our antipodes. Is it not queer that our bees should have gone back in their tastes for color when they crossed over the equatorial line and came to this side of the world?"

With due impartiality I have in the foregoing now made the reader acquainted with the essentials of Prof. Gale's observations and conclusions. I can not deny myself the privilege of making some comments, and also to post the reader on what others have done in a similar line, so he may be in a position to judge for himself. Of course, we are agreed that the honey-bee plays a very important part in agriculture, and I am glad the professor holds this view. In regard to the question, "Are certain colors more sympathetic to bees?" opinions differ. All the observations Prof. G. cites fail to prove that color does not attract bees. He seems to labor under the impression that others had so misconceived the nature of our little industrious friends as to think they would ever stand around admiring the beauty of the flowers. I can assure the professor we *all* have a better conception of the business qualification of our bee. We are well satisfied they do not visit ever so gaudy flowers if those flowers have nothing to offer. To find out whether a certain color is more attractive to the bee than another we must allow the bee to choose between the colors, *and we must adjust all other conditions so as to be exactly alike.* If one blossom, inconspicuous as it may be, hides in the depths of its corolla delicious nectar, that blossom will be visited by the bees. A highly colored flower, but yielding neither pollen nor honey, will receive no attention from bees. What reasonable person would expect any thing else?

The bee has two sets of eyes, one set calculated for long range, the other for short distance. It can, therefore, see. Its antennæ are excellent olfactory organs, and it can probably scent nectar in flowers for a longer or shorter distance. I judge that it does not require much time for a bee to ascertain whether a blossom, even a strange flower, is worth visiting or not.

Dr. Herm. Muller, of Germany, conducted a long series of experiments some 15 years ago, which seem to show that gaudy colors are not preferred by the bee. Light-yellow, white, light-blue, violet, rose, purple, bright-yellow, fiery red—that seems to be the order of their choice. Dr. M. took different-colored plates upon which he placed food, and then he noted the behavior of the bees, spending a great deal of time. Generally but two colors were submitted to choose from. The result was as stated.

An observation he made, which is not exactly in line with our subject, "Influence of color," etc., I will make mention of here, as it is very interesting:

Watching a single bee he found it would get its fill of honey in 2½ minutes. In 3½ minutes it had made the home trip, had unloaded and returned. On the whole it made 70 trips in 7 hours. All bees observed were marked with oil color on the thorax; every other bee a different color. Thus he was enabled to distinguish between the different bees, and to note their individual behavior to the colors and otherwise. The different bees behaved differently in many ways. Finally an average was taken. In this way the conclusions arrived at had some foundation. It would have led too far to give these experiments in detail, and for that reason I have only briefly mentioned them. It will seem to me they prove more than Prof. Gale's observations.

Color exercises a pleasurable sensation upon the human eye, and why not upon the eye of the bee? Prof. G. says, in the beginning of his address, "As a rule, inconspicuous flowers are wind-lovers, and those of gaudy tints are insect-lovers." It would be reasonable to suppose that the color was given these latter flowers so to attract the bees and insects. Of course, that does not yet prove that one color may have more attraction than another. I leave the reader to draw his conclusion.

Naples, N. Y., June 15.

[I will explain to our readers that we have employed Mr. Greiner to do our reviewing of special bulletins relating to bee-keeping. When I received the bulletin from the Australasian Association, on the color of flowers and its influence on bee-life, I referred it to Mr. Greiner, asking him to give us a boiled-down synopsis of the paper, and this he has done in a most admirable manner. The reader will find much of real value and interest in it.—Ed.]

CANDIED VS. LIQUID HONEY AT RETAIL.

A Reply to Dr. Miller, R. C. Aiken, et al.

BY CHALON FOWLS.

Editor Gleanings:—In reply to your query on page 396, I did see Dr. Miller's Straw about Mr. C. F. Muth selling candied honey, but somehow I couldn't swallow that statement, thinking Dr. M. must be mistaken. It looked to me very doubtful or misleading. I have no doubt that he "sold more honey than any other man in the State;" but what part of Mr. Muth's trade did Dr. Miller refer to? If he meant that sold to manufacturers in original packages, mostly barrels, I suppose that was generally candied; but that is not what I am talking about. But if Dr. M. refers to Mr. Muth's bottled honey, put up for the grocer's trade, then my impression is that by far the largest part of it was put up in the liquid form.

In Nov., 1884, I spent over a week in Cincinnati; and as Mr. Muth in his hearty way invited me to make my home with him while there, I did so. I remember one day at dinner that Mrs. Muth spoke of melting up four barrels of honey that morning. He had 700 barrels of honey in his cellar at that time, and his store was literally crammed with comb and extracted honey. Of the latter, nearly all was displayed in the liquid form in the Muth bottles. I well remember there was a pyramid stacked up in front, higher than my head, probably a ton or two, in the Muth bottles, as clear as crystal. Right there is where I got my first points on how to put up honey so as to make it attractive and *sell.* Now, if I were raising butter I would lay all my plans so as to capture the fancy trade and get the *top price.*

In the name of common sense, why should not progressive bee-keepers be as much alive to their interests as progressive farmers? In answer to an inquiry I have the following letter from Mr. C. F. Muth's son:

> *Mr. Fowls:*—My father always sold a good deal of granulated honey to consumers (they were those that you could talk to, and he at all times made it his business to talk it); but when it comes down to business among the trade, then it must be liquid, or there will not be much sold. It is surprising how little the people know of extracted honey; and it takes talk, talk, and only a few understand, or want to understand. If the masses were made to understand that they could buy pure extracted honey at retail at 15 cents, we alone could dispose of many carloads a year to the consumers; but as it is, the real consumer that is looked for is the manufacturer. FRED W. MUTH.
>
> Cincinnati, Ohio, May 15.

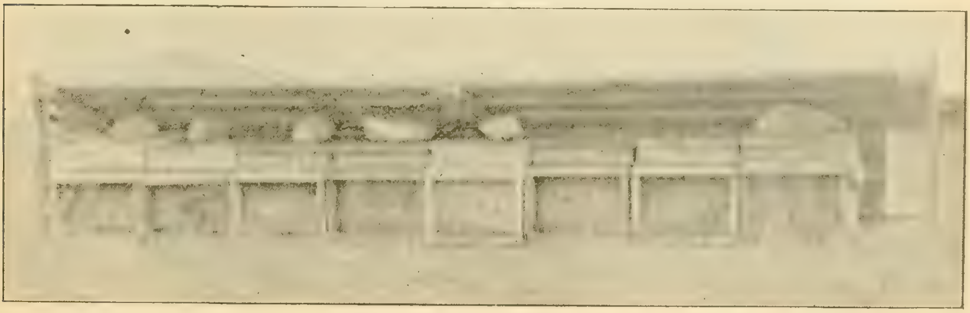
It would seem then that Mr. Muth's trade in small packages for family use was built up principally with *liquid* honey. His trade in candied was only with such customers as he could see personally, and this accords with my own experience.

I sell to 60 or 70 retail grocers, but I can only guess how many people buy the honey—perhaps between 1000 and 4000.

Now, as I don't operate a store myself, as Mr. Muth did, you can see that the number of people I could see personally must be small, as I now have no time to peddle, and in addition to my local trade my bottled honey is now handled by some grocers whom I have never seen.

What in the world does Dr. Miller call "good prices"? The price Mr. Muth got from manufacturers? *Rats!* probably 7 or 8 cents by the barrel for the best, and lower for other grades. I have yet to learn of a single producer who sells any large amount of candied honey put up for family use, at any thing like a remunerative price. Can you find a single person who sells exclusively candied honey in that way? If so, trot him out.

But I can imagine that, if this fad obtains favor in the country, it will mean lower prices for us all. I have a letter from a New York State honey-producer and seller of honey in which, after heartily commending my former article, he says, "If Aikin has his way we



J. E. LYON'S METHOD OF WINTERING BEES IN THE VICINITY OF LONGMONT, COL.
See Editorials.

shall be selling honey at 3 cts. in a short while." Tell Dr. Miller that, some years ago, I planted a tree, and I have now climbed it, and am now enjoying the fruit of my labor. When I saw him pelting me with *straw* I just laughed. The fruit is ripe and good up here, and I am not going to come down for straw. Better try a clod.

Oberlin, O., May 23.

[I think we shall have to admit that friend Fowls has the best of the argument. The proof of the pudding is in the eating. He has been getting and is now getting double prices for his honey, because he puts up a first-class article, sees that it is never allowed to candy while on sale (and if it does he replaces it), and puts it up in an attractive form. Friend Fowls, and friend Selser, of Philadelphia, come very near being our best authorities on bottled honey—at least, I believe they know more about the subject than any other two bee-keepers in the country, and they both believe and follow the same method; and yet if either one of them were in Mr. Aikin's locality he might find it more convenient to put out his honey in the candied form, and that the profits would be just as great; or, what is more probable, the people of Colorado would not pay the prices obtained by Mr. Selser and Mr. Fowls for their bottled goods.—ED.]

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BISULPHIDE OF CARBON.

Its Use in Destroying Moth-worms in Brood-combs and Comb Honey; how to Apply the Drug; some Misconceptions Corrected; a Valuable Article.

BY C. DAVENPORT.

In GLEANINGS for April 15, Rambler thus tells how Dr. Chase kills moth-worms in brood-combs:

"Set the hives containing the combs in a pile of several in height: place under the bottom hive a few drops of bisulphide of carbon, and it soon accomplishes its mission."

Those who have tried this plan have undoubtedly thought there was a mistake somewhere; for the fact is, used in this way it would not have much more effect than so much water—at least on such moth-worms as inhabit this locality. I have used considerable bisulphide during the last few years, and have done a good deal of experimenting with it; and if used in the right way it will kill the worms and also kill or destroy the vitality of any eggs of the moth-miller which may be in the combs at the time they are treated.

Before describing the method that must necessarily be employed to do this I wish to say a few words about the bisulphide; and I should like to know if there is any one in our ranks who knows much about it—how it is made, and whether there are two kinds of it. The druggist here was able to give me but little information in regard to the matter; but he said he thought there was only one kind; but I think there must be two kinds, or at least two grades of the stuff.

Some time ago I bought quite a quantity of it. This had a powerful, repulsive, sickening odor, and it was very explosive. The druggist cautioned me to be very careful with it, for he said it was very dangerous if fire was brought near it, as the fumes from it, as well as the liquid itself, would explode.

In order to find out just how dangerous it was I experimented with it by putting small quantities in a dish, and using a lighted match on the end of a long stick. Before the flame touched the liquid itself there would be an explosion every time.

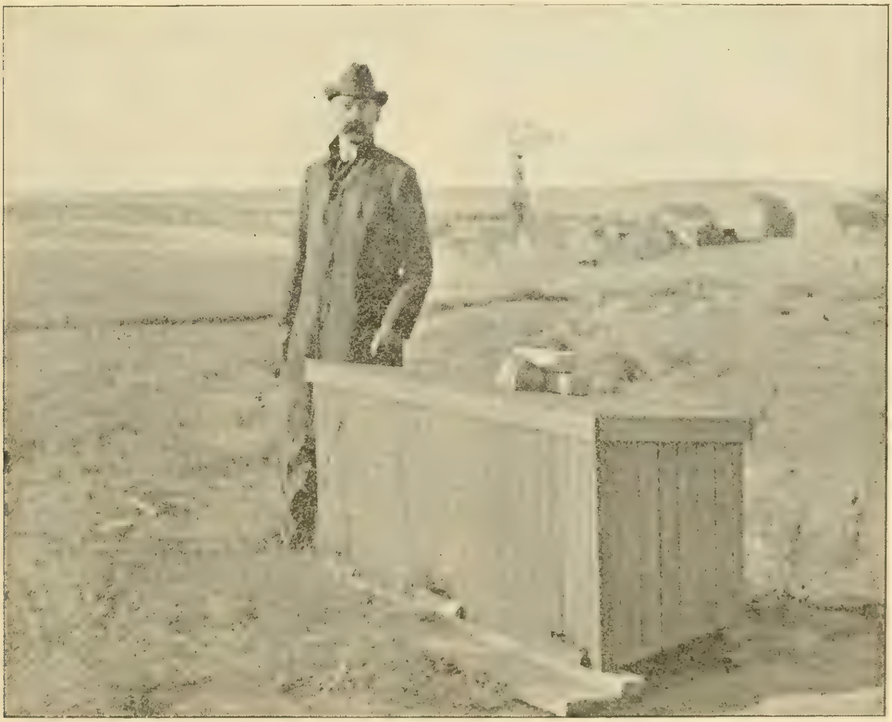
Section honey which was exposed to the fumes of it long enough to have moth-worms killed seemed to become thinner, or gather and hold some of this damp fume. In some cases the combs, soon after treatment, would sweat the same as honey that has been kept in a damp cool place will. It also injured the flavor. I explained the matter in detail in GLEANINGS the same season these experiments were made.

This first supply having been used up, last season I purchased more, which seems considerably different from what I had at first. This first supply I got was kept by the druggist in a large tin can which would hold a number of gallons All he had last season was in small tin cans which held only a pound, and it was much more expensive than that which he formerly had. The bisulphide in these small cans, costing 40 cents apiece, though it was nearly if not fully as effective in destroying moth-worms as the first was, the fumes from it do not seem so powerful, neither could I get any to explode. A lighted match dropped into a small quantity would not cause an explosion, though it would set the liquid on fire, which would burn somewhat slowly until all consumed, and it does not appear to injure comb honey as the first did, though my experiments with it in this respect have not been thorough enough so I can say positively that it will not. I would not dispense with its use as a means of destroying moth-worms and eggs in brood-combs, even if it cost three or four dollars a pound; but in order to make its use effective it is necessary that the combs to be treated should be put in a barrel, box, or something of the kind that can be closed up perfectly tight; and instead of sprinkling a small amount of the bisulphide on the inside of whatever is used, quite a quantity of it must be placed inside in an open dish. I use a small glass tumbler. The amount to use does not matter so there is enough; for any that does not evaporate can be poured back in the can for future use, as, no matter how long a quantity of it may have been exposed to the air, any of it which has not evaporated is just as strong as it was before being exposed. It is like chloroform in this respect. The latter I have also used, and found to be effective in destroying worms in brood-combs. But it has no effect on the eggs, and it utterly ruins the flavor of comb honey, giving it a strong rank taste. It is much more expensive for this purpose than the bisulphide, and the combs have to be subjected to its fumes for a much longer time.

When using bisulphide, the length of time necessary to expose the combs to its fumes depends upon how tight the box or whatever is used to treat them in can be closed, and its size—no matter, though, how long brood-combs are exposed to these fumes, it does not injure them in the least; but as a matter of economy merely, one would not desire to treat them for a longer length of time than is necessary, and this is an easy matter to tell; for if, upon lifting out one of the combs, and one dead worm is found, they are all dead, for this stuff shows no favor, but kills all, big or little, alike, and at the same or very nearly the same time. It is entirely different in this respect from the fumes of sulphur, for with sulphur, as those who have used it have probably noticed, the small worms are killed in much less time than the large ones; and if, as my experiments last summer lead me to believe, there is one grade or kind of bisulphide that will not injure section honey, it will be a great boon to bee-keepers in localities where moth-worms are as troublesome as they are here, for, except when they are quite small, it is impossible to kill them in comb honey with the fumes of sulphur unless the combs are treated long enough to become discolored, which, in the case of section honey, may injure or prevent its sale altogether; and after worms reach a certain size, say one inch in length, it is impossible to kill them at all with sulphur unless the combs they are in are treated so long that they become fairly green in color. But for some reason moth-worms develop much more rapidly in brood-combs than they do in section honey. On this account it is not so difficult a matter to keep the latter free of them by the use of sulphur, provided they are treated in time, and often enough so the worms do not reach much size; for when the worms are very small they can be killed by the fumes of sulphur without discoloring the combs in the least; but sulphur has no effect on the moth-eggs, and the great advantage of bisulphide to treat brood-combs is that it kills the eggs also, so only one treatment is necessary if the combs are afterward put where the moth-miller does not have access to them.

It seems to me that The A. I. Root Co. should investigate in regard to whether there is one kind that will not injure comb honey; and if so, keep it in stock so bee-keepers could, when ordering, have a can or two put in with their supplies, as many druggists do not keep it on hand. But possibly the formalin Rambler spoke of might serve us as a moth-worm killer better yet. I was reading in a paper some time ago that it was used at nearly all the large libraries in the United States and Europe as a means of disinfecting books; but the druggist here had never even heard of it, nor was I able to procure any in several large towns in which I was last fall.

Southern Minn.



THE RAUCHFUSS BROS.' TENEMENT HIVE. SEE EDITORIALS.

[In answer to your question I would state that I always supposed there was only one kind of bisulphide of carbon. It may, however, vary in strength and in point of explosiveness; but I should presume that the article first sent out might be more explosive than that now made. The very fact that it is now put up in *small* cans goes to show that its dangerous character is recognized by insurance companies, and it is doubtless the underwriters' rules that specify the use of small cans. The makers of the drug have probably also made an effort to render it less explosive. There was a time when benzine was so explosive that it was hardly deemed advisable to bring it into the house—much less use it in stoves for cooking purposes; but now it has been so carefully refined we have what is at present designated "gasoline," a much safer article to use.

No one has heretofore, I believe, gone as thoroughly into the uses of bisulphide of carbon as you have. As it is a dangerous as well as a valuable drug, to know *just how* to use it is worth not a little.—ED.]

CLEANING UP AFTER EXTRACTING.

Honey from Cappings; how to Treat the Cappings; Honey Vinegar; Making the Wax and Vinegar Pay for the Work in the Apiary; Melting Wax on the Stove.

BY MRS. A. J. BARBER.

After all the combs have been extracted, and while they are being returned to the hives, and the tank is being emptied, the two persons who have been uncapping wash the knives, pails, and other utensils used in the work, and the floor is cleaned by throwing on several pailfuls of water, and sweeping it off. We let the cappings stand until next day. I usually attend to them early in the morning, when they are nicely drained. There are usually two or three pailfuls of honey in the tub under them. The honey is put away, and the cappings washed by pouring a lot of warm water through them several times. The tank, extractor, and strainer-cloth are rinsed out with hot water first, and then with cold, and all rinsings put into the vinegar-barrels with the washings from the cappings. We often have 25 gallons sweet enough to make good vinegar. The cappings are put into a solar wax-extractor, and make fine wax We have never had any thing but a home-made extractor; and as we render up scrapings and old combs—any thing that will make wax, we have some impurities in it. It is all put aside until the honey season is over, and then I take an afternoon for melting it over and cleaning it.

I begin my preparations by putting newspapers on the floor all round the stove; then after getting a good steady coal fire and a big wash-boiler with two pailfuls of water over it I get my cakes of wax on the left-hand side, within easy reach of the stove. On the right hand I put the vessels for the melted wax. I have a bag of cheese-cloth, made about the size of a pillow-slip, and put several cakes of wax into it, and put it into one end of the boiler, having the top of the bag over the end of the boiler, so that it does not get into the wax when it melts. As fast as the wax melts and the water gets to boiling too hard, I put in fresh cakes to keep down the heat. As the wax melts it is dipped off with a tin dipper or cup. I can take care of a lot in an afternoon, and it comes out nice too. When I get all the cakes melted, and the bag is taken out, I dip carefully until there is about half an inch of wax left on the water. I leave that to cool, as there is always a dark sediment on the lower side. This cake is put away until next season, when it is put through a solar extractor again.

This year we are getting a Rauchfuss extractor, and hope to do away with the mussing about the stove, though it is not so bad as I used to think it would be. Last year I prepared 130 pounds in four hours, and had no cleaning up to speak of except to scrub my boiler with dry papers for a good long time. The vinegar is more work, as we make several barrels every year. We try to make the vinegar and wax pay most of the running expenses of the apiary.

Mancos, Colo.

GLEANINGS FROM GLEANINGS.

Tall Against Square Sections, and Plain Sections and Fences.

BY A. J. WRIGHT.

Much discussion has arisen in regard to tall vs. square sections. While some condemn the latter in strong terms, others favor them, and by no means are anxious for a change. I think it was the editor who said that the 4¼ × 4¼ is about as near standard as any thing we can get. Now, I believe in adopting that which is the best when we are *sure* that it *is* the best; but this continual changing is very trying to the nerves as well as to the pocket of the bee-keeper. As for myself, I can see no good reason for changing from the 4¼ × 4¼ to any other size. Some of the reasons given for changing are that the tall sections are handsomer, better filled, and are preferred by customers, bringing a better price, etc. The tall sections—door and window shaped—do not to my eye present as handsome an appearance as the 4¼ × 4¼ square, equal on all sides, without deception. That the bees will fill the tall section better, I am slow to believe. It is urged that the bees build downward faster than sidewise. Now, while it is true that the bees of necessity keep the lower edge of the comb a little in advance of the width, yet in building in a 4¼ × 4¼ space, if there is any thing like a force of bees such as ought to be working in sections they will keep the sides pretty well along with the downward movement; and in the event of their reaching the bottom sooner they will devote their energies to filling out at the sides.

Allow me to digress, and call your attention to p. 569, where Mr. Niver puts this question: "In one hundred cases, how many cases of sections would you expect to find of that kind?" (sealed clear out to the wood or nearly so), and Mr. Root answers, "Perhaps one or two." Why, if my bees didn't do better than that I should feel considerably discouraged. Last season 90 per cent of my section honey in 4¼×4¼ sections were filled clear out to the wood all around, and not a pop-hole—a very poor season too; and this, I believe, was due to the habits of my bees, and also to the plain sections and fence which I have adopted. I do not believe any better showing can be made with the tall sections. Where did this idea of a house-door or window-shaped section come from any way? Did some customer clamor for it? or is it the output of some manufacturer or producer who has some new idea that he wishes the public to adopt? Can a better price be obtained? If so, is it not for the reason that the customer is deceived into believing that he is getting more honey for his money? and is this deception honorable? Do you believe that the average customer would pay two cents a pound more for the tall section on the basis of its more attractive appearance?

As I have said, I believe in improvement; and when I am satisfied that it is better for me to adopt the tall section I will do so; but I believe it to be an unnecessary and expensive change for bee-keepers to make. I believe with you, Mr. Editor, that the 4¼×4¼ section is about as near standard as any thing we can get.

I said I had adopted the plain sections and fences. The sections are all right. The fences are open to the objection that they are very difficult to clean; and if they are accidentally left out in the wet the glue will soften, and the fence fall apart. The general principle and theory of the fence is all right; but there is yet, I think, quite a field for improvement. I notice there is a tendency among some of the brethren to get a little huffy over the matter of sections. Let us carry on these discussions in a friendly manner. If there is a class of people in the world who ought to be sweet-tempered it is the bee-keepers.

Bradford, N. Y.

[The idea of the house-door comparison to the tall section originated with the most extensive bee-keeper in the world, Capt. J. E. Hetherington. It is the latter, I believe, who has been getting from one to two cents a pound above the market price, for his honey, for a good many years; and I believe he attributes this difference largely to the shape of the section. It was also Capt. Hetherington who, I believe, started the tall section. Fads and improvements are bound to come. Some are good and some are bad. As you say, we should proceed cautiously, and ascertain whether our own locality, as well as the local markets, will warrant the change. With regard to plain sections and fences, the article just following, by S. P. Culley, is something to the point.—Ed.]

TRAVEL-STAIN; NON-SWARMING; FENCE SEPARATORS.

A Reply to J. E. Crane and Dr. C. C. Miller.

BY S. P. CULLEY.

In a late issue of GLEANINGS Mr. J. E. Crane takes the writer in hand in an article of some length on "travel-stain" and "non-swarming." We are glad that Mr. Crane was not "squelched" by our former article, as that was furthest from our intention. We both write, we think, to advance the cause of truth.

As to travel-stain, we now, as in our former article, admit that there is pollen-stain, also propolis-stain, and likewise old-cappings stain; but also, as formerly, we claim that there is a saliva-stain. To prove it, take a piece of snow-white section, put pure clear syrup on it, and let the bees lick it off with their tongues; repeat over and over, and you will see the white wood grow yellow and more yellow each time; while if you put some of the same syrup on a similar piece of snow-white section just as often, and wash it off with clean clear water, instead of having the bees lick it off, and note the difference in the way the pieces of white wood are stained, you will be surprised. The ones the bees licked will develop the genuine saliva travel-stain, yellow and deeper yellow, while the other will not have a trace of it. Do those who doubt bees secreting saliva suppose their tongues are run dry, so to speak? that they secrete no lubricant similar to saliva in other animals—synovia, etc.?

In the first article we said this secretion is more copious in a slow than in a fast flow, and Mr. Crane calls this "ingenious adaptation to requirements." Suppose the actual amount of this secretion to be about uniform, it would follow that, during a fast flow, when the bee loads with nectar and unloads often, there would be *proportionately* less of this staining during the fast flow. Also, during a fast flow the combs are more promptly filled, and there is, therefore, less licking by the bees than in a time-consuming slow flow, hence less stain during the fast and more during the slow flow. How does Mr. Crane account for the glossy blackness that once white combs gradually acquire? Is this from pollen?

As to Mr. Crane's charge of "ingenious adaptation to requirements," we do not see that he has as yet made out a case. We are more than willing to co-operate with Mr. C. or others to produce non-swarming bees; but we can not expect success to crown our efforts. Mr. Crane discourages our plan for possibly producing non-swarmers by preventing swarming for generations and generations *of bees* till they forget that method of increase, and says it would take fifty years, and is too slow—that it may be done by selection. As to speed, eight generations of bees can be produced in one season—more than that in the far South. This would be forty generations in five, or eighty generations in ten years. In three, five, eight, and ten years some of the queens could be "turned loose" to do as they please about swarming, and progress noted. A marked diminution of the swarming impulse at any time observable would be encouraging. This "forgetting" plan is the one (scientific men assure us) by which nature works great changes by evolution. Mr. Crane's plan of selection has also a scientific basis as an aid to the first.

We have no faith in the idea that a strain of bees may be produced in which the honey-gathering instinct shall develop to such an extent as to overshadow and absorb the swarming instinct; because one primary object the bee has in gathering honey is to rear brood, to "multiply, and fill the earth," to "bring forth its kind;" and how increasing its honey-gathering ability or disposition would operate to overshadow or dwarf the disposition to swarm, we can not make out. We should look for no such effect. In our view, as well expect to produce a strain so intent on honey-gathering that they would curtail eating. The honey-gathering ability and disposition should and may be increased; but does this also, of itself, decrease the disposition to swarm? We fear not. Our own observation is all against the idea. We say again, we are ready and willing to co-operate in efforts to produce non-swarming, but it will be a case of works without faith. By the way, can there not be some plan devised to aid in the carrying-out of such protracted and expensive experimental work as an effort to breed out the swarming impulse, as by governmental or State aid, or aid from the National Association? Such work is rather protracted and onerous for individual effort and investment, and the reward is uncertain. Furthermore, an individual might devote years of time, and then through sickness or death all gain, if any, be lost.

We leave to the editor the task of investigating Mr. Crane's fish story—that one about Prof. Loeb producing fish-spawn by chemical means. We are interested in the outcome, however, and hope the editor will use all diligence in ascertaining the exact facts If this professor can produce fish by purely chemical means, let us urge him to devise a method of producing bees without the use of queens or drones. Then we can produce our bees as we wish, and dispense with swarming on the requeening plan.

In the July or August GLEANINGS, 1899, Dr. Miller told of an experiment he made by filling one half of some supers with plain sections and fences, and the other half with bee way sections and old fashioned separators, and against the fence separator. The doctor expressed surprise that freer passage should do harm, as he had better finish with the old-fashioned way. In a late issue of the *Progressive Bee keeper* he gives the same experience. We think we can explain that. Dr. Miller's locality had a poor season, little or no flow from white clover, a mysterious slow flow afterward, according to his own testimony in Straws. This unusual season explains the matter, in our opinion. The old-fashioned separators make each section virtually a compartment in itself, while the freer communication of the fence makes one compartment of the whole super. During a slow flow these small compartments will be occupied a few at a time as needed, the solid separators tending to confine the bees till each occupied compartment is properly filled and finished, while the freer communication afforded by the fence (during a slow flow, mind you) causes the bees to occupy more space than the flow justifies — hence poor finish. Did Dr. Miller ever have a colony working nicely in one super, raise it, and add one below, and have the bees abandon both instead of occupying the added one? We have, and it is the same principle of too much room, scattered bees, and dissipated forces, that operated to produce the result of which Dr. M. speaks. We do not regard this as a point against the fence separators and plain sections under usual and normal conditions. With bees to occupy the super, or a good portion of it, and an average flow, the freer communication is a big advantage with most colonies, we think; but *weak* colonies during a *slow* flow will do better-finished work with solid separators, because they concentrate in a part of the compartments instead of spreading out through the super.

Higginsville, Mo., April 25.

[Your explanation regarding the doctor's experience with plain and old-style sections is one that I advanced nearly a year ago, and also at the Colorado convention in November last; and later facts have proven it over and over again, that in a slow or moderate flow, and in the case of a colony not overly strong, the old style sections with separators would have the advantage; but when there is a good flow, and colonies are *strong*, plain sections with fences will be filled sooner and better. But if there is any advantage in the old-style separators they can be used just as well with plain sections, only the separator would have to be cleated.

With regard to the fish story, that matter has been already covered and answered by Prof. Cook on page 434.

As to the non-swarming idea, in the article just following from the pen of W. W. Somerford, of Cuba, is something which may throw a little light on the matter. Something has already been accomplished as will appear from what he says, although I suspect that the common run of Italians would have shown a marked superiority over the common blacks in Cuba, in just the very respects named; it would not be surprising, therefore, if queens of *selected* stock would develop a progeny that would do exactly what Mr. Somerford's Italians did for him. While I can hardly believe that the breeding-out of the swarming instinct would also breed out good honey-gathering qualities, yet we may have to admit that many times a newly hived swarm will show energy sufficient to gather as much as or more honey than would have been taken from the parent colony and swarm had no natural increase taken place.

In the matter of saliva-stains, I believe you are right; for I have noticed that sections are often stained in the way you speak of. I have also noticed the cappings of honey with the same discoloration. This saliva-stain can be removed by bleaching, *a la* Walker, as I have before explained. Possibly the pollen-stains and saliva stains have been confused for one and the same thing.—ED]

NON-SWARMING BEES.

Have we Succeeded in Getting Them Yet?

BY W. W. SOMERFORD.

I am surprised to see so much in your columns in regard to the "possibility" of producing a non-swarming race of bees, and at the same time have good honey-hustlers. I was of the opinion that that fact had long ago been *settled* by all bee-keepers who had had much experience with bees. The swarming impulse, so far as my experience goes, has about been bred out of the best bees now offered by all our standard queen-breeders.

I had evidence so strong to prove it, since coming here last October, that I will never doubt it again; nor could any one else, situated as I was, having one small apiary of modern bees, from the States, and one apiary of about the same size that had the pure native Cuban black bee that has made Cuba so famous for honey and wax for the last three or four centuries. Those same black or brown bees were robbed at no time more than once or twice a year, while with modern management twelve superfuls a year would have been the result, or more I put said bees into frame hives, furnished them combs and foundation in plenty, and gave them plenty of room and attention, and should have gotten honey. But I didn't. After the cool weather was over I got only swarms — swarms from sunrise till sundown. I handled them to the best of my ability; but after January I got only swarms, and supers full of brood.

I was using ten-frame hives, and lots of them had brood touching the top-bars in the top stories — no room for honey, and no idea of getting any except enough to feed their brood on—a worthless strain of bees except to store honey in *cool weather* in December and January. While those native bees were cutting such swarming and brood-rearing capers my modern-bred non-swarming bees were filling their supers solid with honey every seven or eight days, and kept on doing it until May, and not a swarm from any of them until the honey-flow slacked off—until they could find nothing to do but swarm; and then only two out of the lot swarmed, and all were booming colonies. All my modern-bred bees did the same thing — hustle in the honey, not swarm to death, as that trait was positively bred out of them years ago—so much so that the question as to the possibility of breeding out swarming is, I consider, a settled one, and I learn from my friend Mr. Howe, Mr. Coggshall's old "lightning operator," that that fact is a part (the greater part too) of Mr. C.'s success. He uses bees that store honey, not swarm according to "nature," as some suggest; and when Mr C. gets "by buying" a ranch of those natural swarmers, "swarms is all he gets until requeening the outfit."

Caimeto, Cuba.

CONVERSATIONS
WITH
DOOLITTLE

MANAGING SWARMS HAVING CLIPPED QUEENS.

"Say, Brother Doolittle, I am having trouble with my swarms which have clipped wings, and I came over this afternoon to have a little talk with you about the matter, to see if you can not tell us something more about it than you did in the May 15th number of GLEANINGS."

"Well, Brother Swift, I will do the best I can to help you; but you should always bear in mind that no person can well get all of the minutiæ of any thing into one number of a bee-paper. What seems to be the trouble?"

"In the first place I did not seem to be able to get the bees to alight on the swarm-catcher having the caged queen in it. I held it up in the air in the thickest of the bees, but they paid no attention to it, but went right to clustering on a limb of a tree."

"They will sometimes persist in doing this; and to overcome this part of the matter I sometimes hold the catcher close up in front of the hive where the bees are issuing, so as to catch a pint or so, when the cover is shut over these bees and the caged queen. Now hold it up in the air, as spoken of in a former number of GLEANINGS, and the bees in the catcher, together with those in the cage, will fan their wings, which tells those in the air that they have found the queen and are clustering about her, when, as a rule, with me, the swarm will at once begin to cluster on the swarm-catcher. However, some swarms seem bound to cluster on the limb of a tree; and where this is so, as soon as from one-fourth to one-half have clustered I open the catcher, leaving the caged queen inside, catch what has clustered in the catcher, closing the cover. I now leave the catcher with the bees inside till all of the bees which are outside cluster on it, when they are taken and hived the same as a swarm from a limb."

"But suppose you do not find the queen before the bees have all ceased to leave the hive, how do you then get the bees to tell the others the queen is in the catcher?"

"If the bees all get out before I find the queen, then I allow them to start to cluster, and proceed as before. Or I sometimes hold the catcher in front of the entrance before I find the queen, if I do not see her readily, and, after finding the queen, I slip the cage containing her in with the bees."

"Do you ever have any trouble from the bees not clustering on the limb or on the catcher, but returning while you are trying to get them?"

"Yes, I have had them return without clustering anywhere."

"And did they always go back to their own hive? or did they scatter all about, entering wrong hives and getting killed to the amount of half or more of the swarm?"

"Sometimes they are inclined to enter wrong hives, especially if the hives stand close together; but with hives standing ten feet apart each way, on the hexagonal plan, as do mine, it is quite a rare thing to have the bees of any swarm try to go into wrong hives."

"Only the other day I had a swarm scatter all about, or spread out all over the whole apiary, instead of clustering, then in a few minutes they commenced to go into half a dozen hives all at once, and nearly all of them were killed. This made me feel very bad, and I almost resolved never to clip another queen. I thought they might better have gone to the woods than to have been killed in this way."

"This *was bad*, and something which I never had happen in all of my 30 years' experience with clipped queens; but, even bad as it was, you had the queen left, which you would not have had where a swarm absconds. I presume I should have gone more into the minutiæ of affairs in my article in GLEANINGS for May 15th, but it had been so many years since I used to have trouble from swarms entering wrong hives that I had nearly forgotten this part."

"Then you did have trouble from swarms entering wrong hives when you were beginning to work with swarms which had queens having clipped wings?"

"Yes, somewhat, for two or three years; and it is strange that trouble often comes along many lines to a beginner which do not come to us when we are more advanced in apiculture, even though that which we try in our advanced period may be entirely new to us. In our novice stage we lack that calmness and steadiness that we have after years of experience, and so we go at a thing with a nervousness and fear which is sure to work evil results if such results are possible. Then we are so anxious for success that we greatly magnify a slight reverse, thinking and talking of it as "*perfectly awful.*" The same thing happening in our riper years would scarcely cause a ripple to come over our feelings. At least this is the way it has been with me."

"But is there no way of preventing bees entering wrong hives when returning, after missing their queen?"

"Yes. And one of the first things I learned when caring for swarms having clipped wings was that I should have near at hand from two to four old sheets or blankets to throw over any hive or hives a returning swarm might start to enter. And I used to go to the precaution of throwing a sheet over the two hives standing on either side nearest the one which had cast the swarm. But you will see how easy it was for me to forget this when I tell you that I have not used a sheet for this purpose in ten years."

"I am glad for this explanation, for it makes me feel better in knowing that you used to have trouble along the same line I have had; and as you have succeeded, I believe I can if I can only "hold out faithful." But should you not wish to use the swarm-catcher or the Heddon plan, as given in the May 15th GLEANINGS, have you no other plans to use?"

"Yes, I often use two other plans, one of which is as follows: Proceed to find the queen, as given in May 15th GLEANINGS; and when she is found and caged, turn the old hive half way around, and off the ground (to the rear) where it stood. Now place the new hive on the old stand, or where the old one stood, placing the caged queen at the entrance. As soon as the bees come back, and half or more of them have entered the new hive, let the queen run in with them. Now wait till the most of the bees have entered the new hive, and become comparatively quiet, then take the hive, swarm and all, and carry it to a new stand where you wish it to stay, after which the old hive is brought back to its old position."

"I think I understand how to do this. What is the other plan?"

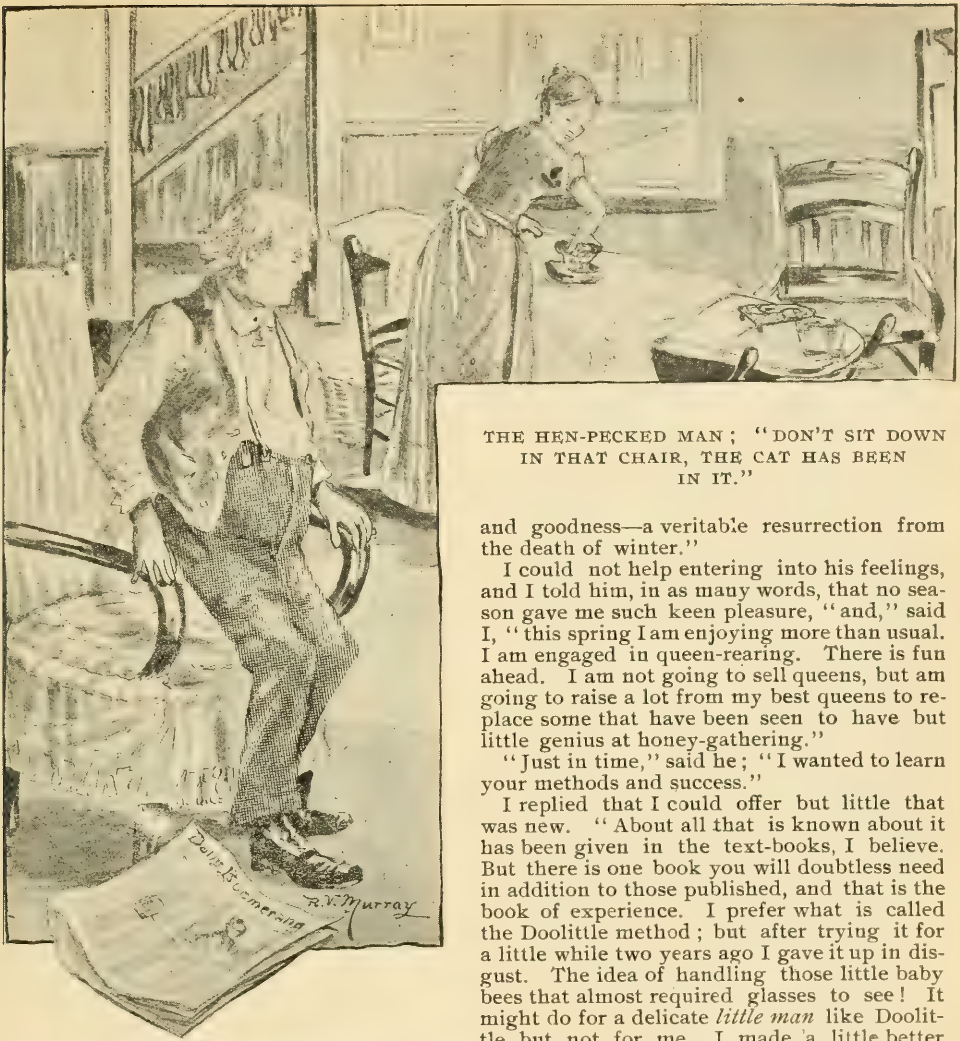
"Proceed to hunt up the queen as before; and as soon as she is found and caged, lay the cage in some convenient place; only so you do not step on the cage and kill her, as I knew a certain person to do once. Next move the hive, from which the swarm issued, to a new stand, where you wish it to remain, and place a new hive where the parent colony stood, getting the caged queen, and placing her at the entrance. In from 3 to 40 minutes the bees will miss the queen (in from 3 to 8 if they do not cluster, and in from 8 to 40 if they cluster), and come back in search for her, when she is to be allowed to go in as before spoken of."

"Well, I must bid you good day now. I am glad I came over, for I feel more encouraged to go on now."

"I am glad you came, if I have been of any help to you. I know that, to one who has been used to hiving swarms whose queens go with them, the clipped-queen management seems to have its drawbacks. But when we get a little used to it, there is a certain independence and assurance about it, as well as no climbing of trees, no cutting of limbs, nor any thing of the kind, which our fathers thought it necessary to do, that makes us feel that we are masters of the situation, and are much in advance of the old ways."

K. L. R., Wis.—The spider and Simpson honey-plants have not realized early expectations. They are scarcely mentioned in bee-literature. Sweet clover, on the other hand, is a great honey-plant, and in the future will make itself more valuable than it now does.

W. T. S., Ill.—Honey, to be boiled and disinfected, should have a little water added to it, so that when it has been boiled an hour or so it will still have the same consistency it did before it was boiled. Ordinary thick honey placed on the stove would be apt to boil all over, and it should be thinned down very materially before any attempt at heating has been made. No, there would be no danger, I think, of bees getting foul brood at an ordinary drinking-trough. So far as I know, the disease is conveyed only through the honey or the old combs that have been in diseased hives. It may be carried on the clothing of bee-keepers, but nine times out of ten it is carried by robbers from infected honey.



THE HEN-PECKED MAN; "DON'T SIT DOWN IN THAT CHAIR, THE CAT HAS BEEN IN IT."

SHOP TALKS
BY UNCLE LISHA

REARING QUEENS A LA DOOLITTLE; SIZE AND SHAPE OF QUEEN-CELLS; A CRITICISM ON DOOLITTLE'S BOOK; ANTS AND KEROSENE.

"Talk of miracles," said Deacon Strong, one morning in early May, as he came in to make some inquiries in regard to queen-rearing. "Six weeks ago the earth was a veritable wilderness, while to-day every thing is instinct with life. The buds are bursting into green leaves and flowers; the earth is green; the air is vocal with birds' songs and the sweet hum of insects. Spring comes every year as a new and marvelous revelation of divine love and goodness—a veritable resurrection from the death of winter."

I could not help entering into his feelings, and I told him, in as many words, that no season gave me such keen pleasure, "and," said I, "this spring I am enjoying more than usual. I am engaged in queen-rearing. There is fun ahead. I am not going to sell queens, but am going to raise a lot from my best queens to replace some that have been seen to have but little genius at honey-gathering."

"Just in time," said he; "I wanted to learn your methods and success."

I replied that I could offer but little that was new. "About all that is known about it has been given in the text-books, I believe. But there is one book you will doubtless need in addition to those published, and that is the book of experience. I prefer what is called the Doolittle method; but after trying it for a little while two years ago I gave it up in disgust. The idea of handling those little baby bees that almost required glasses to see! It might do for a delicate *little man* like Doolittle, but not for me. I made a little better work last year, but my young queens seemed a good deal like Admiral Dewey—they were always putting in their appearance a day or two before they were expected. But I am going to put a stop to that sort of business this year."

"How is that?" inquired Deacon Strong.

"Why, I am just going to gather my eggs every day, and label them, and then I shall know when they ought to hatch if they are at all scientific."

The deacon laughed a little.

"How can you do it?" said he.

"Why, the simplest thing in the world. I shall put my best queen, that I wish to breed from, on one side of the brood-chamber, and give her two combs; one may be mostly honey, and the other with an abundance of empty cells for her to lay in. Then I will separate these combs from the rest of the brood-chamber with a queen-excluding division-board, and every morning or evening, as most convenient, take out this comb of eggs and place on the other side of the division-board, and mark so I shall know when the eggs were laid, and give the queen another comb to lay in for the next twenty-four hours. In this way I shall have, each day, eggs by themselves, and four days later I can select larvæ that I am sure of. I shall know that the largest will be not far from two days old, and the youngest one day. Another advantage is, when going to out-yards later in the season I can find plenty of brood of just the right age all in one comb, which I can take with another comb of brood and bees and put in a nucleus hive and carry to my furthest yard, without trouble. I found this method of carrying brood from yard to yard last year entirely practical. Of course, I do not expect to rear queens away from home except during the swarming season or when honey is plentiful. I found, after some practice, I could transfer those little larvæ very readily; and once I found I had transferred some fifty larvæ in sixteen minutes; but I found it took me quite too much time to put royal jelly into the cells before placing in the larvæ. I am going to use a quill this year cut out like a trough, and fill with jelly, and then, with a stick the size of a match, run the proper amount into each cell from the end of the quill, and thus save time when time is most valuable. You will be quite likely to meet with failure from trying to use hives without sufficient bees. When Doolittle says a colony must be strong I think he means something much stronger than most of us think of when we use the same word. The disposition of bees to rear queen-cells behind or above a queen-excluding division-board seems to come from a union of the superseding and swarming instincts; and to secure the best results a colony must be strong enough to swarm, and honey must be coming in every day, either from the fields or by feeding. When you rear queens in the lower story, fewer bees will doubtless answer.

"Another thing that bothered me was to get the size of my dipping sticks just right. At first I made my artificial cells, I thought, too large. I made more sticks which seemed too small, and so I made one little mistake after another. Doolittle says he fitted his sticks into queen-cells. But I found a great variation in queen cells; besides, queen-cells have such a way of stretching that I did not feel very sure whether they were right or not. That I might know to a dot the best size, I have made quite a number of plaster casts of the inside of well-developed queen-cells, and find them to vary both in size and shape. Some cells I found to be quite irregular, somewhat flattened, and concavo convex from base to mouth or opening. I found one cell $\frac{3}{8}$ in., or a little more, in diameter, one way, by about $\frac{5}{16}$ in. the other diameter. A very fine cell built to supersede a queen measured slightly less than $\frac{3}{8}$ inch in its largest diameter, and tapered slightly toward each end to $\frac{5}{16}$ or a little less. Thus you see that a stick $\frac{5}{16}$ inch in diameter at $\frac{1}{4}$ inch from the end, and $\frac{3}{8}$ or a little less at $\frac{1}{2}$ inch from the end, is about as nearly right as it is possible to get them. In making sticks, use a caliper rule and you can get them exact.

"Doolittle's work on queen-rearing is most excellent; but there is one serious fault in the last edition. You will have to study it very carefully, and learn where in any chapter to find any item you may want to look up, as there is no index except to the chapters, which seems to me a great drawback, as we often want to get some little fact that we remember in a general way—as, the best way to form a nucleus or introduce a virgin queen—and have not time to look over two or three or more pages, as it may be a whole chapter, to find it when we are short of time."

"I wonder how the Doolittle method of queen-rearing will work when you get your strain of non-swarming bees fully developed," said George Crafts, who had joined us in discussing queen-rearing.

"Well," said I, "it is rather early yet to tell; but if they fail to rear a suitable number of queen-cells above a queen-excluding honey-board—why, we shall get some other breed of bees to do it for us. How would one or two hives of Syrian bees answer? I have often wondered if it would not pay to use them for this very purpose. They would be much superior to any other race. If I could get hold of a gentle strain of these bees I think it would be well worth while."

"How do you manage to get rid of a colony of large black ants? I have one hive where these ants have fairly taken possession of the packing of shavings, and it looks as though they would be in possession of the bees and honey too pretty soon," said Deacon Strong.

"I have been troubled with them some," I replied, "and I used kerosene. You know kerosene is good for almost every thing. I have found it especially good for ants. Just pour it right over them and down in the shavings. It makes them squirm, and it looks wicked, but it is effectual; and, besides, this is a world where we prey on one another.

"'The falcon preys upon the finch,
The finch upon the fly;
And that a rose may breathe its breath,
Something else must die.'

"The use of kerosene has not seemed to hurt the bees any, but you don't want to let it touch them. By the way, Jonas Jenkins was down to see me last night. He wanted to learn something about bees; said his business had not paid very well; had made some bad bargains, and was afraid he might lose his farm."

Just then Tim Fasset happened along, and his fun-loving nature could not resist the temptation to say that he thought "the worst bargain Jonas ever made was when he married Mariar."

"What do you know about Mariar?" I asked.

"Oh! my wife's first cousin lived for two years next neighbor to him. I guess she is a pretty good woman, but she is cur'us. If Jonas got tired she would say, 'Jonas, what makes you work so hard? we have only one life to live.' If he didn't work hard she would say, 'Jonas, you ought to be stirring around; you know we are in debt.' If Jonas read a book she would say, 'My cousin Jerusha used to tell me not to ever marry a bookworm.' If Jonas was in the kitchen she would say, 'Why don't you come in the sitting-room with the rest of us?' If he went into the sitting-room, 'Jonas, why didn't you take off your boots?' and if he stood up she would say, 'Why don't you sit down?' If he went to sit down it was, 'Don't sit down in that chair, the cat has been in it.' If he talked of hiring a man she would say, 'Don't, Jonas; if you only thought so you could do your work alone; and, besides, a hired man might talk about us.' If he tried to do his work alone it was, 'Why don't you keep your work up, and not get so behind?' If he kept cows she was sure to think there was less work and just as much money in sheep; and if he had sheep she was sure to tell him that wool was away down, and it did not pay to keep sheep. I don't wonder his pigs are of the caseknife breed, or that he wants to try bees.

"Well, I didn't encourage him very much. I just told him he had better look the business up carefully before he invested, for it was a good deal easier putting money into bees than it was to get it out of them."

HEADS OF GRAIN FROM DIFFERENT FIELDS

DRAPER BARNS FOR BROOD-REARING AND FOR HONEY.

Mr. Root:—"Blasted Hopes" is what I have to report now. I will mail you a sample section. I have never seen nice clover honey come in any faster than it has to-day. But then, the first thing in the morning and the last thing at night the old black honey-dew comes just as fast. If you know any way to keep it separate, telegraph me at once. I don't know how to do it, and I "don't know that I know who does know." Excuse me for quoting Dr. Miller, but it seems to fit. The section I send you would make a nice picture for GLEANINGS. I have never had my bees in as nice shape as I have them right now for a crop of honey, and the prospects were never better, if it were not for the bug-juice. If Mr. A. I. R. and Mr. F. A. S., on page 490, June GLEANINGS, could see the bees in those 20 barns I got of you last fall (or, rather, summer), they would never mention chaff hives or Danzenbaker hives either. I got them strong last summer, and young queens in every one of them. I put the molding for handles on the winter case instead of the body. My object was so that I could raise the winter case up around the super when it was put on this spring. The leaves were packed tight enough between the body and the winter case so that the packing would hold the winter case in place around the super. The winter-case roof was filled with leaves, and a burlap follower was nailed inside of the roof an inch and a half above the lower edge. During the latter part of February and the whole of March and part of April the wintering roof was removed every warm sunny day, so that the sun could shine direct on top of the brood-frames, covered with a quilt, and the packed roofs were turned upside down so that the sun shone on the burlap inside of the roof. I scratched the honey in the upper part of the frames with a fork a time or two, some of it three or four times. The result is that eight of those deep combs are filled with brood solid clear to the top-bar. With this arrangement there is no scattering of the leaves. The difference in color alone makes several degrees difference in warmth between chaff and the leaves. Now, then, the theory that deep brood-frames can not be equal to shallow ones on account of not getting the frames filled with brood clear up to the top-bar, is all bosh. The bees in the deep hives will get into the sections quicker than in the shallow hives, for there are about twice as many of them to get there. Chaff is not to be compared with leaves for packing. The proof of the pudding is in the eating. Try it.

Now, if you follow these hints, before the three years are up you will be a "Draper-barn" man, beyond the peradventure of a doubt. I am by the barn as our old deacon was by the Bible. It was in prayer-meeting. He said he believed the Bible, every word of it. He believed that the whale swallowed Jonah; and if the Bible had said so he would have believed that Jonah swallowed the whale just as quick. I wonder if Jonah felt any bluer while he was "in the belly of the fish" than I do now over the honey-dew. I'll try it over.

A. N. DRAPER.

Upper Alton, Ill., June 6.

[There is no question but those large barn frames are well adapted for brood-rearing. The queen seems to like to fill them up solid; for on these frames she can make an almost perfect circle of brood; while in a Langstroth or a shallower frame the circle is broken. Personally I expect much from Draper barns in the future in the way of honey — for some localities at least. One can go through one of these barns and see every inch of comb in very much less time than he can see an equivalent surface of comb in a double-brood-chamber hive. Neither are the big frames awkward to handle.

The fact that these barns use the same bottom-boards and covers as the regular ten-frame Langstroth size is quite a recommendation in their favor.—ED.]

BELGIAN HARES.

I have raised Belgian hares for two years, and find it profitable. They would gnaw young trees if they got a chance, but I have always kept them confined. There is too much danger from dogs and cats if they run loose. They are very prolific, as a doe will bear from six to ten every two months through the year. They have thick fur, and the hide is as tough as a musk-rat's. Their meat is as white and tender as frogs' legs. They are rather tender, and are liable to die without apparent cause; but if care is taken to keep every thing clean there will be little loss.

Cicero, Ind., July 2. S. W. CARSON.

INTRODUCING QUEENS WITH TOBACCO SMOKE; THE USE OF IT AMONG BEES IN GENERAL.

Last summer I lost six queens in introducing according to directions sent out by breeders; but I quit that method and took A. I R.'s method, hinted at in an old edition of the A B C, using tobacco smoke at sundown. Out of 36 I never lost one. Why don't you recommend it more? B. F. JONES.

Idaho Falls, Idaho, May 7.

[Tobacco smoke for the purpose of handling bees should be used very sparingly and carefully. It is hardly safe to advise beginners to use it, for its effect is to stupefy the whole colony; and if the fumes are administered during the day there will be an hour or two hours, perhaps, when the bees, slightly intoxicated, would put up no defense whatever at the entrances. If during the robbing season, they would allow robbers to come right in pellmell and help themselves; hence tobacco smoke is recommended for use only at night. But even then I suspect the introduction could be accomplished almost as well without the weed. The best time to introduce queens is toward night. We once released two dozen queens right among the bees, and every one was accepted. The queens in this case were some that came through the mails, badly daubed, and reached us just at nightfall. Nothing remained but to let the queens run loose and take their chances, and we were very greatly surprised the next morning to find all of them apparently nicely accepted.

In peculiarly stubborn cases tobacco smoke may be used, especially where the bees are determined to ball the queen, and we have positive evidence that the bees are queenless. I have made a colony so "beastly drunk" (pardon the expression) that when the bees finally recovered from their spree they accepted the queen, when before that they would ball her on sight.

Our practice now is to use tobacco smoke only during fair time, for, unfortunately, our county fairgrounds are within an eighth of a mile of our apiary; and during the time the stands are making taffy, selling watermelons, lemonade, and the like, our bees would prove to be a great nuisance unless we went around to all the hives and gave a smudging of tobacco smoke. This is done in the morning, about 8 o'clock, and another dose is given about 1 o'clock. Half a dozen puffs of smoke are blown in at the entrances, all over the apiary. If the colonies *are all* stupefied there will be no danger from robbing. This smudging keeps the bees at home. But care should be exercised, as there is danger of overdoing it, and also danger of not doing *enough* of it; for if they have once got a taste of the sweets over at the fairground it takes a great deal of stupefying to keep them at home.—ED.]

QUEENS FLYING ON EMERGING FROM THE CELLS.

Noticing several references to the power of flight of young queens on emerging from the cell, in recent numbers of GLEANINGS, I will relate my experience.

I cut two cells from a frame of brood. On opening one I found an immature queen, white and motionless. The other contained a very vigorous young queen which came out as soon as the cell was opened, and flew off a few feet. As I had no use for her I thought I would see how well she could fly. I held her up on my hand about six feet high. Starting from that she flew a circular course of about fifty feet, alighting on a catalpa limb about fifteen feet from the ground. Resting there about a minute she arose, circled around twice, and flew out of sight over the top of my house, which is thirty feet high. Her mother is a hybrid, about five per cent of her workers black; the remainder show three bands plainly. F. G. ANDERSON.

Wabash, Va., May 15.

[I have had queens fly immediately on emerging from the cells, but never more than four or five feet. The circumstance you relate is quite out of the ordinary, and yet I have no reason to doubt it.

These circumstances of a queen flying immediately after hatching are explained by the fact that bees often confine their queen-mothers in the queen-cells for several days after the time they should have hatched. It has been suggested that, while they are thus confined, they are fed by the bees. This temporary imprisonment seems to be for the purpose of allowing second and third swarms to depart, each taking a virgin queen; and the bees know that if all young queens emerged at one time, or about one time, there would be a royal battle, resulting in one queen only; and as bees apparently like the fun of swarming, they use the scheme of imprisoning so they can have several gala times. Pardon me if this seams to be somewhat fanciful; but it is pretty well established that the queens are confined, and, if confined, I can conceive of no other reason than the one given.

Well now, then, a queen that has been held in her cell, and been fed, would, when released, be able, probably, to fly quite a distance; although it must feel a little queer to the young to-be-mother to emerge from her dark cell for the *first time* and suddenly find herself transported out into the open, into glorious sunshine, there to enjoy the beauties of nature. The transformation is as magical as it is sudden.—ED.]

Please tell us in GLEANINGS how many acres of buckwheat it will take to keep 100 colonies of bees busy. E. M. HAYES.

Kilbourne, Wis.

[This is a hard question to answer. Five hundred acres *might* be enough. I can only conjecture.—ED.]

HOW FAR DO BEES FLY FROM CHOICE?

I saw an article in the *Australian Bee Bulletin*, July 24, 1897, from Mr. G. M. Doolittle, where he claims his bees gather honey from basswood seven and eight miles from his apiary. I take three bee-journals, but I have not seen the question discussed yet in any of them. I am sure it would be interesting to hear the reports from different people. When I first got the Italians I watched a good deal, but I never found them over two miles from the apiary; of course, there was plenty of forage within that distance. H. SMITH.

Moss Glen, Tasmania, April 10.

[I am very sure that Mr. Doolittle did not intend to be quoted as saying that his bees flew seven or eight miles from choice. When he made the statement in question it was the extremes of flight that he had noticed in his experience, such extremes being only when his bees could not get nectar nearer. As a rule, bees will not fly much over a mile and a half or two miles—that is, providing there is a supply of nectar in the radius named; but if there is none to be had within that distance they will fly further. Sometimes they have gone 15 miles across bodies of water. When basswood is in bloom profusely, and there is *plenty of it* within a mile, the bees will not go further than that. As long as they can get all they can carry home within a mile, it would be poor policy to fly further.—ED.]

HOW TO FIND QUEENS; CURING FOUL BROOD WITHOUT SACRIFICING HEALTHY BROOD.

To find a queen, open the hive rather roughly; quickly move frames apart, just far enough so that the bees can not reach from one comb to another. In from one to two minutes the bees will set up a call of lost queen, and then converge toward the comb she is on. In this way she is readily found.

In requeening a large quantity at once, place the caged queen over the brood frames the night before. Next morning you will find the queen you wish to remove, either on the cage or on the comb immediately below. This, in requeening a large number, is a great saver of time.

Remove queen of infected colony at commencement of honey-flow, on account of less danger from robbing. Let the colony rear a new queen. When she is ready to lay, the old brood will all be hatched; transfer *a la* McEvoy, and a permanent cure is sure, as the bees have no larval food on hand. Extract the honey, boil thoroughly, and after two days boil again, and use to feed. Render wax, remelt, and boil twice, and it is safe.

ANOTHER METHOD.

Shake bees off *a la* McEvoy into a new hive on old stand. Return the combs to the old hive, and place at the end of the hive with entrance at right angles to old stand. Close entrance of old stand, bore a hole an inch in diameter, over which place a tin tube six inches long, an inch in diameter, tapering to ⅜ inch at small end. This end is to lead to the entrance of the other hive. Close all other means of egress or ingress. The young bees invariably draw into the old stock. In five weeks the transfer is complete. Utilize or destroy old combs. W. W. CASE.

Baptisttown, N. J., June 26.

[If I am not very much mistaken, I have tried the plan of separating the combs, for some one had said the bees would set up a call, and that they would work toward the frame on which the queen was. While some colonies might do it, those I tried did not do any thing that gave me an inkling of where the queen was.

But your method of requeening large apiaries would, I think, do very nicely, for a queen already in the hive would be quite likely to be near the caged queen, out of motives of jealousy, and with the evident desire to meet in mortal combat to settle the question of who shall be boss.

Your method of curing foul brood would work very well; but the first plan spoken of would be far better than the second one. Neither one of them should be used unless it is at the beginning of the honey-flow, when there would be no robbing about. During the robbing season it is not safe to leave a foul-broody colony in the apiary for *one day*.—ED.]

THICK VS. THIN SECTIONS.

Would not a section 3×5 in size by 2¼ thick or broad be much better than a thin one 4×5 square? I think a cake of honey 3×5×2¼ would look very tempting on the table. It would take up as little room, and fit as many dishes, as any form I have yet seen. It would require less foundation, and give less of what some term "fish-bone." Such a package would weigh at least one pound, and fool no one, as the broad thin one with its shallow cell often does. It seems to say, "Buy me; see what a great lump of honey you will get," at the same time showing its broad side to the customer in order to deceive as much as possible, knowing every word to be false, which the purchaser finds out to his sorrow when he has slipped it out of its slick case. Some may say bees will not draw out and fill the thick comb as quickly or as readily as a thin one. My experience has led me to believe that, in storing honey, bees rather like (or, I may say, prefer) deep cells, and they will draw out and fill the deep sections quicker, considering the amount of sweet they store, as they will have less comb to work and less capping over to do. I have noticed, when they are storing honey in their brood-chamber, they build their comb much thicker than that in which they rear their young; and if the frames are far enough apart to allow, they will often build their comb 2½ inches thick.

Two years ago I thought I would try to obtain a sort of novelty in section honey to exhibit at our county fair, so I constructed a few broad sections, fastening two standard sections together, and sticking the foundation between the two. Then I arranged a super so these broad sections would fit; put them in, and set the super over one of my best colonies; and the result was, at fair time I had some as nice well-filled and well-sealed sections of honey as I ever saw, weighing about 1½ pounds each. L. O. WESTCOTT.

Swanton, Neb.

[A section 3×5×2¼ thick would give a very nice chunk of honey under the right conditions. But one of the objections to thick combs is that in many places, or where the season is very short, the bees do not have time enough to fill them. As a consequence, ¾ and possibly $\frac{9}{10}$ of all such combs would be uncapped—that is to say, unfinished, at the close of the season. It has been our experience that the thinner combs, while possibly containing more wax to the pound of honey, will be filled sooner, and be more likely to be capped over, than the thicker ones; and then the argument has been advanced that honey ripens better in shallow cells, and ripens sooner. In any of these things it is not wise to go to either extreme; but where the golden mean is, we do not exactly know; but I agree with you that a comb from a section 2¼ inches thick will be very fine eating—that is, *providing* the honey is thoroughly ripened.—ED.]

HOW FAR WILL BEES FLY TO GATHER STORES? A QUEEN FROM YOUNG OR OLD LARVÆ; FLORIDA NOT THE MECCA FOR BEE-KEEPERS.

As I am a subscriber to your journal I wish to ask a few questions in regard to bees. 1. How far will bees fly to gather stores? 2 Is a queen raised from larvæ over three days old as prolific as one from younger larvæ, or eggs under three days? Please give me your opinion in regard to shade for a bee-yard, whether too much is detrimental to their prosperity or not.

By reading the article in June 1st issue, from Marchant, Fla. (the 3000 hives, etc.), it prompts me to make a few remarks. I have lived in this State since 1874, and have camped, hunted, and cut a great many bee-trees, and in a great many different countries, but have never thought Florida a bee Mecca yet. On the whole, in my humble opinion it is a poor bee country, and nothing to compare to one where white clover grows. There is a profusion of wild flowers here, but they are not nectar-producing. For instance, basswood is plentiful here (wah-hoo is the native name), but I have never seen a bee on the bloom. Another instance, I have now and have had Japanese buckwheat before growing here, which blooms and makes fine grain, but I have never seen a bee work on it. There are millions of aquatic flowers and lilies here in my immediate vicinity, but no good for bees. Five years ago, when we had plenty of orange bloom the honey flow was good for about three weeks or a month; but since then, frosts have cut all citrus growth to the ground every year but one, and orange-groves here seem to be a thing of the past. B. B. KEEP.

Boardman, Fla., June 10.

[On the question of the age of larvæ for queen-rearing, I hardly know my own mind. Dr. Miller's experiments have thrown new light on the matter. I refer to what he says on page 521, July 1, and also to one of his Straws in this issue. As to the amount of shade, a good deal will depend on the locality. In Florida I should suppose one could hardly have too much. In the North a colony ought not to have shade before nine o'clock nor after three o'clock in the day.—ED.]

GREASY SECTIONS IN THE CENTER OF THE SUPER THE CAUSE.

Mr. Editor:—On page 427 is a quotation from the *Australian Bee-keeper;* viz., "Have you ever noticed that sections over the center of the brood have a more greasy appearance than those to one side?" intimating that such is the fact, and then asks, "What is the cause?" On page 432, same issue, Mr E. H. Schaeffle gives an answer to the question, which to me is cogent and clear. It seems to be universally admitted that colonies referred to are very populous during the season of honey-flow, and are wonderful honey-gatherers. Now, it would seem that this fact ought to arrest the attention of every investigator, and cause him to readjust his mental microscope for a closer observation; to make a more thorough examination into the causes which bring about results so *desirable* in one aspect, and so *undesirable* in another. Many of the attempts to prove the queen at fault prove too much for the tenability of the position taken, and which it would please me to review; but perhaps enough has been said already, pro and con, to set on foot further investigation into this most interesting subject connected with bee-keeping. What I desire to say and emphasize is, that I've not yet received a single intimation from any one that he has a queen for me. You can scarcely imagine how disappointed I am. Allow me to say again, to any one who has a three-banded Italian queen which fills her hive with greasy-section-producing bees: Don't pinch her head, but properly cage and mail her to me. Twenty-five cents in stamps will be returned for every such worthless queen.

WM. M. WHITNEY.

Kankakee, Ill., June 7.

[I am inclined to think that E. H. Schaeffle is very nearly right—that a contracted entrance on a hot day will do much toward softening the cappings, causing them to fall on the surface of the honey.—ED.]

Could cell-bottoms with eggs be used for transferring by the Doolittle method, instead of larvæ? W. R. L. DWYER.

[Probably, but I should prefer the larvæ just hatched.—ED]

Where can we people in the East get Belgian hares to breed from? WINTON BALL.

Rugby, Va., June 16.

[I do not know where Belgian hares can be purchased; but you doubtless could get particulars by writing to F. Greiner, Naples, N. Y. —ED.]

EDITORIAL
BY
E. R. ROOT

"PLAGUE TAKE THAT BEE!"

IN another column in this issue is illustrated not an uncommon occurrence of what may have happened in our younger days. When the white clovers are in bloom, and the bees are busily at work on them, the small boy is often reminded of the fact in a very pointed way. He knows just what has happened, and generally lets every one else know. In nine cases out of ten he will give free rein to his noise-making apparatus in a series of boo-hoo-ow-oo-ow-oo-ouch! He never thinks of removing the sting, but runs or hops around on one leg. The foot swells, and then he begins to scratch it; and the more he scratches, the more it swells and the more it itches. He is told not to scratch it, but he says he's "got to, 'cause, 'cause, it itches." Sympathizing friends will do the foot up in mud; others will dose on vinegar, saleratus water, and the like; but probably not one of them will have the sense to remove the sting if it is still in the wound; and in two days, if the trouble is over, he may be stung again. But go barefoot *he will*, stings or no stings.

The picture was executed to order by our special artist, R. V. Murray, for our A B C of Bee Culture.

WINTERING BEES IN COLORADO; OUT IN A COLORADO SAND-STORM.

IN our issue for July 15 I promised to tell something about my experience in the sand-storm in Colorado. We were at Longmont, and Mr. Rauchfuss and myself, a night or two after Thanksgiving, were looking up into the sky. Mr. R. remarked, as he scanned the horizon, "We shall probably have a sand-storm to-morrow."

"That is just what I have been wanting to see," I said.

"Well, after you have seen one, may be you will not want to see another one," he remarked.

"Why so?" I asked.

"You will find out to-morrow."

I did not see any thing peculiar about the sky. It looked remarkably clear, and I enjoyed being able to sit out in the open air until after 11 o'clock without feeling any dew nor experiencing a chilly feeling. We were both at the hotel, for we had just come from a family where there was scarlet fever, and we did not feel like visiting the residences of bee-keepers of Longmont. But Mr. J. E. Lyon and Mr. Philip Large, of that place, had promised to take us out to the foothills of the mountains next day, and, incidentally, take us round among some of the apiaries of the vicinity.

The following morning opened up bright, but it was evident that some sort of storm was brewing. By the time Mr. Lyon and Mr. Large came after us with a buggy it seemed like a perfect hurricane. But nothing would prevent us from taking the projected trip, and accordingly we four got into the buggy.

Clouds of sand were blowing in every direction. Indeed, it was almost impossible to see any distance ahead of us at times, for the wind had picked up every thing loose in the streets and in the outlying country, and apparently was pouring it down our necks. I buttoned up my coat collar, pulled my felt cap clear down over my ears so that I looked like a genuine tramp; but the Colorado sand had a fashion of getting into my eyes, ears, and mouth, and down my neck just the same. At all events, I noticed that the other fellows didn't try to keep it out, and they were wise, I am thinking. I had heard much about the clear atmosphere of Colorado, and had had some delightful evidence of it; but I was convinced there was not always clear air there to breathe.

We stopped at Mr. Large's home apiary, and looked at his solar wax-extractor, mention of which I have already made. Then we four got into the buggy for the foothills, some 12 or 15 miles away, but which really seemed to be only a mile or so away. I had my camera with me, prepared to take snap shots of jack-rabbits or any thing unusual or extraordinary; but the sand filled the air so much that it was almost impossible to see any thing, much less take pictures. After we had gone some six or seven miles I asked the boys where they were going.

"We are going to the foothills, of course."

"Well, you have been going there for the last hour," I said.

My teeth were chattering, and filled with sand, and so were my ears. I was chilled through, and the other fellows ditto.

"Well," said I, "have we *got* to go to the foothills to-day?"

"No," they said; "we are going for *your* benefit."

"For *my* benefit!" said I, as another shower of sand went down my back. "Suppose you turn around. I have had all of the foothills, all of the sand storm and all of the Colorado atmosphere I want this morning; and if you fellows have had enough, I certainly have."

With that they turned right about face. I thought I had been facing the wind in going out, but we had no sooner turned around than the wind was again in our faces, or, rather, it was a perfect whirlwind of sand.

On our way back we stopped at one of the out-yards of Mr. Lyon, which was all prepared for winter. The extracting-house had been blown over on its side. His hives were out in the open, in groups of eight or ten, under little sheds. Nothwithstanding the sand was blowing about furiously in every direction, I said I believed I would attempt to take a photo. I poised the camera on two hives, and took a time view—yes, two or three of them—for I did not know what I could get in such a storm of sand. The picture is given in another column, and it is not so bad but one can easily see that the atmosphere was not as "clear as a crystal" that day. The hives are placed close together for the sake of warmth, and under a small shed which backs up against the prevailing winds. The hives were of the Wisconsin type, with porticos. On top of the brood-frames was a carpet or quilt; over this a cover with a two-inch space under it, held down in some cases with stones as shown. This arrangement gives about as good results for wintering as any thing that has been tried, I believe. Colonies in double-walled chaff-packed hives have no advantage over those in single-walled hives.

While the winters in Colorado are severe in a way, there are no long protracted cold spells running away below zero and continuing there for two or three weeks at a time. The mercury may go down to zero, but the next day may be quite warm and balmy.

I saw a good many apiaries put up on this general plan of wintering, as shown in the illustration on page 563, in this issue, and it seemed to be the prevailing method. The main idea is to keep off the sharp winds and to have a very thin light packing over the brood-frames. More was positively detrimental. I also learned that these sand-storms blow the sand over every thing—into the entrances and into the combs sometimes, so that honey and sand are mixed together in the same cells. To provide against this sand blowing into the entrance, and getting into the combs, the Rauchfuss brothers have constructed a sort of tenement hive, shown on page 565. At one end of this hive stands Mr. W. L. Porter, of Denver, whose picture I have already given in these columns, and of whom I have previously spoken. It was a cool afternoon when I visited at the ranch of Herman Rauchfuss, who was absent at the time. While he was gone to town I used the camera right and left; but there was no sand blowing that day, as you will see the picture is very much clearer.

This sand-proof hive holds three colonies, and the peculiar feature of it is the entrance. The bees pass inward, and up a perpendicular space, then off cata-cornerwise to the brood-frames. At all events it is so arranged as to intercept all sand that would blow into the hives, thus keeping the combs clean. The hive is adapted to take Langstroth frames, and, being made of matched stuff, it presents a very neat and pretty appearance. The few bricks and stones on the cover show the necessity of having the covers weighted down to provide against heavy winds that rage so furiously in that State at times.

THE HONEY SEASON FOR 1900.

Reports are still coming in from all sections of the country; and so far the revised outlook stands about as follows:

Michigan seems to be having a good honey-flow—at least I do not remember seeing an unfavorable report, while we have on file a large number of good ones. Colorado, Arizona, and other of the Western States depending on alfalfa, will have their usual honey-flows. In California the reports range all the way from one-third or one-half a crop down to total failures. In New York the reports are unfavorable as a rule—no clover or basswood to speak of. From Pennsylvania there are a few favorable reports. From New Jersey come quite a number of good reports. Reports from Florida vary greatly. Some show a third of a crop; others a total failure. Texas will have a good deal of honey from some sections, and almost none from others. Some of the Southern States will have very little honey. Missouri, that had a crop of honey all over the State last year, has nothing to report this year to speak of. The season in Wisconsin is practically a total failure; a little better in Minnesota. In Iowa and Illinois it is fair to poor. Dr. C. C. Miller is getting his usual crop of honey, or at least he reports he is doing as well as he did last year; but he does not know where the honey is coming from.

Notwithstanding the season seems to be generally unfavorable, we have a large number of good reports from all over the country that read something like this:

"An extra good honey crop."

"Season fine."

"Lots of honey—seems like old times."

"Honey is just rolling in."

So far no large amount of honey has found its way to the centers of honey distribution. At present it is a little too early; but there will be considerable alfalfa honey this year to dispose of, both comb and extracted; a very scant supply of ordinary white clover, and a light supply of red clover and of basswood.

Taking it all in all, the supply of white-clover honey and basswood will be very light this year. Honey, if any is sold at all, will be principally alfalfa with some mountain sage from California, perhaps. There will be on the market, as usual, Southern honeys; and, in all probability, from the large amount of warm rains that seem to be general over the country, there will be a good fall crop; that is to say, the bees will probably gather enough from fall flowers to fill their hives and save feeding. If they will do this much, bee-keepers will probably feel fortunate.

In the mean time I hope our bee-keeping friends will continue to send in their reports, as it is highly desirable to keep in touch with the season as far as possible.

MEASURING BEES' TONGUES.

The following from the Michigan Experiment Station, written by J. M. Rankin, to whom I sent a glossometer—an instrument for measuring bees' tongues—will explain itself:

Mr. Root:—I am going to be one of your competitors for your premium on "long-tongued bees," as offered by you on page 536.

I am glad to know that there is *one* practical man who has begun to realize the importance of this one quality of the bee. As you doubtless know, I have been working on this for the past three years with some little success and a great deal of discouragement and failure. I have found but one man with whom I have talked who does not think I am crazy, and he gives me no encouragement.

My reports on this work have never been published because they were considered impractical. I am almost ready to report on the little apparatus you so kindly sent me for measuring the tongues; but I am sorry to say that I am afraid it will be an unfavorable report. What is a glossometer? and how much does the apparatus cost? I have made many observations similar to yours from time to time. I can give you some figures on the length of the tongues of different strains, which may be as interesting to you as they are to me. The Italians are much ahead of any blacks that I have ever measured, and I have had bees from all over the United States. J. M. RANKIN.

Mich. Exp. Station, July 5.

There, friend Rankin, give me your hand. If there are two of us crazy, then we will take the consequences. I shall be glad to get your report so that we may see what you have accomplished. Worth publishing! Perhaps if the report were given to the world it might show the impracticability of the scheme more than any thing else.

About the glossometer, J. H. Martin, then of Hartford, N. Y., made an instrument for measuring bees' tongues; but outside of this, and a little device I sent you, I know of no others in existence. I do not know how Martin measured tongues, but it seems to me the most practicable method is to kill the bees with chloroform, stretch the tongues out under the microscope, and then measure with a micrometer scale. I have done something of this already, and believe the scheme is perfectly practicable.

With regard to your report, if you send us nothing more than your measurements, showing the tongues of different varieties of bees, that will be all we will ask for the present. It will give us data to work from, and possibly a point to strive at. I would suggest that measurements be given in hundredths of an inch instead of the French system, which is so little understood by common people as a rule.

ACTUAL MEASUREMENTS OF BEES' TONGUES AT MEDINA.

Later.—Mr. J. P. Moore, a queen-breeder of Morgan, Ky., sent me four cages of bees that I might measure their tongues. I also measured the tongues of bees of a Doolittle queen, and tongues of some black hybrids from our own yard. I expected to find a very great variation, but I did not find it. All the tongues I measured would reach easily $\frac{15}{100}$ inch. By exerting a little pressure on the head of a decapitated bee just chloroformed I could get most of the tongues to stretch to $\frac{18}{100}$.

Mr. F. L. Sladen, in 1887, as reported in GLEANINGS for that year, measured some tongues of the *Apis dorsata* bees, and he found these to be 4 millimeters long, or $\frac{16}{100}$ inch. He also measured the tongues of *Apis mellifica*, and found them to be 3½ millimeters, which would be $\frac{14}{100}$. The latter, I suspect, were the common black bees of England, and we have always supposed that the tongues of the pure blacks were much shorter than those of pure Italians. From this it would appear that Italians have longer tongues than any other bees we know of. I should be glad to measure the tongues of other bees that may be sent in, and render a report through these columns.

My *modus operandi* is this: I first chloroform the bees, when they will stick their tongues out, as they will always do when suffocated. They are next decapitated, when the head and tongue are laid down on the fine gradations of a micrometer scale. The whole is then viewed under a strong magnifier, and the hundredths can then be counted off after the tongue is stretched out with a dissecting-tool.

BEES WITH LONG TONGUES; RED-CLOVER HEADS WITH SHORT COROLLA-TUBES.

THE following letter from Prof. E. C. Green, of the Ohio Experiment Station, Wooster, in line with what I wrote in our last issue, has been received, and will bear careful reading on the part of every one of our readers in regions where red clover is grown:

Friend Root:—In the last GLEANINGS you give an interesting talk on how tons of honey might be saved if there were only bees with tongues long enough to reach the nectar in the blossoms of red clover. Your solution of the problem is simple *if* it can be done, and it will, perhaps, be some time. But while working in that direction it seems to me as if there were another way the problem might be solved; and that is, to raise a strain of red clover with corolla tubes short enough so that the bees we already have can reach the honey. Apply your glossometer to the red clover as well as the bees' tongues. I believe I am safe in saying that the structure of plants can be more easily varied in a given direction than animals. Although red clover is not usually selected, as in many plants, down to the individual plant, there is no reason why it can not be done. Let some close observer watch closely a field of clover; and when he finds a head that bees work on freely let him save seed, and perhaps from this he may develop a kind of red clover that will be of use to the bee, and then let the bee-keepers furnish this seed to the farmer, as you have suggested seed could be furnished free to the farmer within a mile and a half of the apiary. I feel satisfied that the farmers would be glad to plant such seed if it were as good as other clover for their purpose, and A. I would boom it in his very best style. Now offer a prize for a pound of "short-tube" red clover, or whatever you have a mind to call it, and work at the problem from the other direction.

Medina, O., July 6. E. C. GREEN.

I have read Prof. Green's article over with a good deal of interest, and it strikes me he has given us a lead that we may well consider. We know that we have already accomplished something in the way of long-tongued bees, and we feel confident that we can do something more; but from what Prof. Green writes I should be inclined to believe much more could be accomplished in the shortening of corolla-tubes of red clover. I hope this matter may be taken up at the Ohio Experiment Station, under Prof. Green's direction, and in the mean time I hope our bee-keepers will be on the watch for red-clover heads with short tubes. Mark these in some way so that they can be distinguished when they go to seed. Preserve the seed carefully, and sow them in a small patch next year. From this patch select again the shortest tubes, and thus continue on until a short-tubed clover is developed. If this kind of clover could be secured, the bee-keepers could well afford to furnish the farmers the seed free, and the result would be that such seed would be disseminated all over the country.

L. M. H., N. C.—The ordinary bee-martin and king-bird are the only ones I know of that do any damage in the apiary killing bees, and they do no particular damage where no queen-rearing is being carried on. We should not suppose that ordinary martins would do any harm whatever.

NOTES OF TRAVEL
BY A. I. ROOT.

Dear friends, what I have to say just now will come under the head of Travels, Homes, and Gardening—all three, and I do not see how I can well separate them. Under the circumstances I can not well choose a text either; for if I do I shall not stick to it. I shall, however, get around to some texts now and then that have been a good deal on my mind: "A new commandment I give unto you, That ye love one another;" and, "We be brethren."

Some time ago our good friend Pike the florist invited me to call and see his greenhouses. He said he was not far away from Dr. Miller's; and then I told our folks that, whenever there was a low rate on the railroads leading into Chicago, I was going to take a trip that way; therefore when I saw that a special rate of only $8.50 would be made from Medina to Chicago and return on June 26, I decided that was my time to go. This special rate was on account of the national Prohibition convention; and as I have of late been trying to post myself in regard to all political parties I decided to take in at least a part of the convention. Some people, when they are going to take a long ride in the cars, take along a book or a paper. I have sometimes done so, but of late I never want any book or paper—that is, while the cars are in motion. I never want any printed page when I can have the book of nature spread out before me, passing like a panorama.

WHITE CLOVER IN CULTIVATED FIELDS.

As I approached Toledo I was struck, as I have been before, by the wonderful fertility of the soil and the great crops occupying almost every acre. But this time I was delighted and astonished to see some fields of white clover, eclipsing any thing I had ever seen before. You usually find white clover mixed in with timothy, and often with red and alsike clover. When near Toledo there was field after field of *pure white clover*, and nothing else—not a spear of grass—in fact, not even a *clover* leaf broke the expanse of heads of white clover. They were not only as thick as they could stand, but they seemed piled one on the other, two or three deep. I can not think it was natural growth, for the fields were thrown up in beds, with dead furrows at regular intervals. I think it must be grown for the seed; and if so, what a wonderful chance for bees! I wonder if Dr. Mason has seen these white-clover fields, and can tell us any thing about it. In describing it to our veteran bee-keeper M. M. Baldridge, of St. Charles, Ill., he said it was probably white Dutch clover, grown for seed. He said that, some years ago, a man in Wisconsin who made a specialty of white Dutch clover seed for market succeeded in growing $100 worth of seed on one acre of ground. Can any of our readers tell us something more about it? I know there was a time when white Dutch clover seed brought from $12.00 to $14.00 a bushel. Is it possible to grow six or more bushels to the acre? and how much are such fields worth to the bee-keeper? The glimpse I got out of the open car-window revived my old enthusiasm in regard to a model honey-farm. Permit me to say, parenthetically, that we sowed our buckwheat and crimson clover with a sprinkling of turnip seed, all together, yesterday, July 4. It is a little early, but we had the ground ready (a clover sod turned under), and I thought I would try extra early sowing on all three. I will now go back to my travels, and a slight change of subject.

I reached Chicago between 9 and 10 o'clock at night. As I passed out of the Lakeshore Depot I thought of what the *New Voice* had said in regard to saloons in that great city. There they were, sure enough, thick on every street. All sorts of inducements were thrown out to get people to enter. I will mention just one of the attractive advertisements. On a great building, in large letters, there is a proclamation something like this: "I am the man who first inaugurated Kentucky whisky at only 5 cents a glass." A sign, with the man's name on it, was just below this inscription, and many other reasons were given why one should patronize this establishment instead of a hundred others roundabout. This person seemed to think he had conferred a lasting benefit on humanity, something like the man who invented the mowing-machine and reaper, the telegraph, etc. But *he* was the *pioneer;* and people out of gratitude, looking to him as a benefactor to his race, should buy their *Kentucky whisky* there. Again and again in passing through Chicago I was struck with the suggestion that the people engaged in the liquor-traffic did not even seem to know that anybody *objects* to their business. Evidently, it has never occurred to them that more than half of the people of the United States are opposed to the business they are engaged in.

Before 4 o'clock next morning I was up and dressed, and my wheel and I sallied out of the hotel. When I am in a great city like Chicago I can not afford to waste precious hours. By 5 o'clock I was out in Lincoln Park, a good many miles away, admiring the flowers, the green lawns, the beautiful wheel-paths, and thanking God that he had given me a human life to live. The flowers possessed a new beauty for me this time, because I knew the names of most of them. I was somewhat disappointed, however, in not finding any nice colei in the open air. In fact, I did not see any at Vaughn's great string of greenhouses, nor anywhere else on this trip. As nearly as I could learn, the weather has been unfavorable for the coleus outdoors; but with warm nights and sunshiny days they will probably put on their gorgeous hues later on. It was consoling to me to find this state of affairs, because we have succeeded so poorly in getting handsome colei on our own grounds in the open air. The most attractive bed to me at Lincoln Park was a collection of ten-weeks' stocks. At a distance a plant in full bloom looks considerably like a hyacinth. There is a tall stalk with flowers set closely around the stems. The center of the bed was planted to flowers perfectly white; and around the white was a belt of pink, then purple; outside of this a wider belt of blue, or a purplish blue; then the whole oval bed was bordered with dusty miller. There are several of these beds in Lincoln Park. When they are sparkling with the dew of the morning, the effect is enough to make one throw up his hat with a shout of delight. There were other combinations that were particularly fine; but this one, on account of its newness, perhaps, to me, excelled them all.

By 8 o'clock I was back in the city, at the Lexington Hotel, the headquarters of the convention. Although I am not a member of the Prohibition party, I was very kindly welcomed by the delegates from Ohio, and invited to take a seat in their special parlor; and I do not know that it was ever my fortune to be thrown among a lot of brighter, keener, and *cleaner* men than I met there. Not only are they temperate so far as liquor is concerned, but I hardly think there was a man in the room who used tobacco in any shape or manner. Perhaps some of you will say, "Why, then, Bro. Root, are you not one of them?" I will try to answer very briefly.

In our own town of Medina almost every thing is settled in our primary caucuses, and the Republicans, at present, have the upper hand. A man may be ever so good a scholar, and he may have every qualification to fit him to advise and direct in the affairs of the town; but unless he is a Republican his vote is a cipher, and nothing more. Not only can he have no word in regard to who shall be on the town council ("wet" or "dry"), but he has no part in selecting good men for our board of education. If his wife presumes to take part in electing a school board, she will be asked at once if her husband is a Republican; and if not, she is ruled out. I am told this is not the case in every town. Thank God if that is true. I know there are thousands who are longing and praying that the time may come when we can vote for the best men without any regard to what political party they belong to. May be I have not got the above exactly right; but even if this is true, it is pretty *nearly* right, and there is more or less of this state of affairs throughout the whole United States of America. Ours is a dry town, and by the grace of God we have kept it dry for many years past. Very likely The A. I. Root Co. has of late years had considerable weight and influence in keeping the town dry as well as the surrounding townships; but if the members of our company should support any ticket other than the Republican, their work and influence for temperance, purity, and every thing else, would be cut off. Good men and good women have for years past lamented this state of affairs.

Now, perhaps I am getting into deep water in what I am going to say; but I think I am pretty nearly right, if not entirely. Some years ago the Christian men and good temperance men of Ohio, recognizing the condition of affairs which I have described, banded themselves together for the purpose of restraining the saloon by what they call the Anti-saloon League. This League was to work with the present existing political parties. Our men were to be selected *from* all parties, and we as an organization were to labor *with* all parties. At the time it was organized I do not believe any one of us had any thought of being antagonistic to the Prohibition party. We were banded together with Jesus Christ as our leader, ready to do any thing, work anywhere or in any way, for upholding temperance and righteousness. At every meeting I have attended, some of our very best speakers were from the Prohibition party, as, in fact, they were from all parties. If there are any among our number who did not feel toward the Prohibition party that "we be brethren," working toward one common end, I certainly did not know it. May be I am dull in not being able to comprehend even *now* why these two great temperance parties can not work in harmony. Of course, it has been explained to me; but still I insist that, while Christ Jesus is our common Lord and Savior, there need be be no clashing unless *Satan himself* gets into our hearts; and this, I am afraid, he has done. My good brother J. J. Ashenhurst, editor of *The Cornerstone*, Columbus, O., said to me in Chicago (and since by letter) that he personally was willing to do any thing to bring about a union of the Anti-saloon League and Prohibition party. If all were like him I am sure it would come quickly. Now, dear friends, I have pondered long and prayed earnestly that the Holy Spirit would direct me, and tell me if it is wise to bring this much of politics into our journal.

The convention was held in the great armory building on Michigan Avenue. I am told it is capable of seating ten thousand people. I got in pretty early, hoping to get a seat near the speaker, as of late I am troubled to hear unless I can be near by. In fact, at church my seat is almost as near the pulpit as it well can be I can not keep in touch with the speaker unless I am close by. Well, to my surprise and astonishment, at this great meeting the delegates alone filled an inclosure around the speaker so large that I could scarcely catch a word of any of the addresses. There seemed to be delegates from every State, each one carrying an appropriate banner; and if the sight of the faces of our Ohio delegates gave me a thrill of joy, the whole United States of America, each State furnishing a good-sized crowd of pure *clean* men and women, thrilled me still more. There was so much enthusiasm and cheering I did not expect to hear any thing until the meeting was really opened In a little time I was convinced that humanity needs educating in other lines as well as temperance. The chairman rapped on the table with a good-sized mallet or gavel fully fifteen minutes before he could even make himself heard tolerably. I took into consideration that hundreds of people were meeting there after a long absence; and I tried to consider, too, that there was an unusual amount of brotherly feeling in that crowd; but where people have come clear from the western side of the continent to transact business of the greatest and *gravest* importance, they should be taught in some way to hold their tongues at the proper time. It was not only the women, but the men as well, all over that great audience that *would* visit during the exercises, in spite of any thing the speaker or any one else could do. Please do not think I mean to censure this crowd more than other similar crowds. Our people here in Medina have tried to have speeches on our public square; but it is almost always more or less a failure, just because so many will occupy the seats and crowd within hearing distance about the speaker, and then spend their time in visiting, and talking about private affairs. I do not know but I am somewhat guilty, because during such a meeting sometimes somebody will ask me a question of much importance to him, and he might think me unkind if I refused to give him a civil answer; and this answer calls for something else, and so on, until we discover people around us, and may be the speaker himself, are wishing as vehemently that we too (*two*) would "shut up," as I wished people might shut up at that great temperance meeting. Permit me to add that the interruptions were all of the most friendly and kindly nature. I have *heard* of political meetings where they not only had hard *words*, but fights and brawls to interrupt the speaker.

Well, I spent one forenoon in doing my very best to hear something that some one of the many speakers had to say; but the crowd increased instead of diminishing, and the ventilation was by no means adequate for one of my temperament, so I went away disappointed. Yes, I know very well that Bro. Ashenhurst and other kind friends who knew me would gladly have given me a place where I could hear; but I should have to crowd somebody else out, and I was an Anti saloon man rather than a Prohibitionist. Of course, an invitation was given me to be one of them, and to put on the harness and pull with the rest; but while I am heart and soul in the work they are trying to do, for the reason given above I could not accept the kind invitation.

After having a very pleasant visit with Bro. York, of the *American Bee Journal*, I started for Marengo; and while waiting for the train I looked over the markets of Chicago. Garden stuff and vegetables of every sort (let alone fruit from all over the world) were piled up there in such great quantities I could hardly believe all this perishable stuff could be distributed and used before it would spoil, even by the great city of Chicago. For the first time in my life I saw stalks of rhubarb fully a yard long, some of them almost the size of a child's wrist, stacked up like cordwood. Other vegetables of like luxuriance were there. I should really like to see the grounds where much of this stuff is grown. There were strawberries and raspberries, gooseberries, currants, ripe apples from further south, plums and cherries from California, besides all sorts of tropical fruits. There were cherries as large as plums, and there were plums as large as peaches, until I could not tell whether the crates contained small peaches or large plums. Of course, strawberries were toward the close of the season; and although I looked the market over pretty carefully, I did not find any thing that would compare with some I saw a few hours later, grown on Dr. Miller's own premises. I called at Burnett's, and inquired about honey, but no new honey was yet in the market — at least I did not find it; and, by the way, I suppose it is not so much of an object to get the first honey on the market as it is the first strawberries and the first fruits and vegetables.

I found our jovial friend Dr. Miller dressed in white, not quite like the porter in a Pullman car, but more like a mason or a man who follows whitewashing for a living. I did not catch on to the doctor's reasons for wearing white pants until he reminded me of the fact that bees are less likely to sting a white object than a black one, and I think he is right. If your bees are in the habit of stinging through your woolen clothing, put on some starched linen, pretty good thickness, and I think the bees will go for somebody else dressed in black.

The doctor knew, of course, that I was more interested in looking over the strawberries than the hives, so he took me to the strawberry-patch first. I believe his ground is naturally favorable for berry-growing, but for years past it has been a good deal neglected — that is, so far as I know. (I hope the doctor will take no offense at this.) But on the 26th day of June there was the finest lot of strawberries and strawberry-plants there I ever saw in my life. I do not mean to say by this there were more *berries* than I ever saw before on a like area, for it was at the close of the berry season; but they were the finest and strongest and healthiest-looking plants I ever saw, and quite a good supply of nicer berries than I had been able to find in the Chicago markets during that same afternoon. Now, the doctor did not grow these berries. He is a bee-man and not a berry-man; but Mr. Stull, who married Mrs. Miller's sister, has been growing berries under high pressure. As nearly as I could learn, there are two special points he observes. First, his matted rows are thinned out. I do not think he allows his plants nearer each other than six or eight inches. This thinning is done thoroughly, no matter what it costs. Then he is a crank on the subject of stable manure. In Marengo he gets all the stable manure he can draw, for 25 cents a load. With good roads and an appropriate wagon, and a stout team, I think he said he has piled on as much as two tons at a load. You see the principal part of the expense is the hauling. Well, he goes to work and makes his berry-patch a veritable barnyard, not only between the rows, but between the plants. The ground is black and damp with old well-rotted stable manure. Of course, he gets weed seeds more or less, and this is the greatest objection to his method. He asked my advice about using chemicals instead of manure. I told him I did not think any chemicals would ever grow such berries. They are so large, luscious, and juicy, that I did not recognize many of my old friends. If I am correct, his best early berry is the Excelsior; and we found a few nice berries still while I was there. The Excelsior is two or three days earlier than any thing else. For an all-purpose berry he would place the Marshall almost if not quite at the head, and I believe I agree with him. He has found the Clyde also to be one of the best. He has no rust on his grounds. I think I never before saw a patch of strawberries where you could find scarcely a rusty leaf on any variety toward the close of the season.

Now, he has been doing with raspberries almost as wonderful things as with strawberries. The Eureka is one of his best black caps. They are cultivated and thinned like the strawberries, and then mulched with manure. He has lately been trying a mulch of some sort of swamp grass that contains no seeds. I think I never saw so many raspberries on the same area of ground—no, not even at our experiment stations. If I am correct, he gets rid of many of the weed seeds in the stable manure by composting it. It is piled on a piece of vacant ground, three or four feet deep, the top of the heap being nearly flat and level. Then at different times the pile is cut down and forked over so as to get it uniform. Sun and rain do the rest of it. There may be some waste by this process—doubtless there is; but well-rotted manure will take right hold at once and make the plants boom. It was worth to me going many hundred miles just to get a glimpse of what is really possible in berry culture by following up these two things: Spacing the plants properly, and piling on the manure in season and out of season.

The doctor and I are both dyspeptics—that is, we have suffered from bad digestion. We both abstained from berries the evening of my arrival; but in the morning, finding myself apparently "O. K." I ate berries before breakfast, then I ate a lot at breakfast (great luscious whoppers), then I sampled them after breakfast again; and after Mr. Stull, the proprietor, had arrived, discovering that I had made a mistake in naming some of them, he and I went over the patches together, and I sampled them still again. Then at dinner I had *another* great big dishful; but when the doctor's wife brought out some beautiful raspberry pie I thought it was time to draw the line, and asked to be excused from taking any pie; but ever so many times since then, when I think how delicious that raspberry pie looked I have almost felt sorry that I did not have a piece and take the chances. By the way, doctor, don't you think you could manage to send me a piece of raspberry pie by express—that is, if raspberries still hold out? I seldom eat pie here at home; but if it was like what I saw that day in Marengo, I think it would not hurt me.

Well, then, there is another thing that is nice at Dr. Miller's. While in Chicago, finding it difficult to get hot water between meals I drank tea and sometimes coffee; but while we were waiting for the train at West Chicago the engineer of the waterworks forgot himself and let the water run over the tall waterworks reservoir; thereupon the station agent opened the valve at the drinking-fountain to take advantage of the situation to rinse the pipes thoroughly. The sight of the beautiful gushing water made me more thirsty. I told the clerk of the eating-room that I would willingly give him the price of a cup of coffee for some of that water made hot. He soon brought it; and, oh it was *so much* nicer than any tea or coffee I ever tasted in my life! It was hard water, but the minerals seemed to me to "hit the spot" and fill a "long-felt want." When I got to Dr. Miller's I was delighted to find the water from his well seemed to be just like it, so I generously treated the crowd (the whole lot) to all the pure clean hot water they all wanted to drink; and may be that is why so many berries did not hurt me a particle. Since returning home I have been longing for more of the water that comes from Dr. Miller's well.

Perhaps I should explain that the hot water I drink is heated to only 110 or 120—never hotter than the latter, and sometimes it is less than 110. Several times, when I could not get artificial heat, I have used water that stood in the sun until it was as hot as the sun would make it. If you find disagreeable symptons follow from drinking all the cold water you want on a hot day, just try water warmed to the above temperatures. Do not by any means think of drinking water so hot that it throws you into a perspiration. This would be very apt to make you take cold, even during a very warm day.

SWEET CLOVER FOR HORSES.

Dr. Miller had just cut two tons of sweet-clover hay. I should say by the looks of it it was allowed to get rather too rank and tall to make the best hay; but as an object-lesson he opened the stable-door and whistled for his three horses. They evidently supposed it was feeding time, or for some special reason they were to be fed. All three marched into the barn, and turned their heads toward the mangers; but as nobody seemed to hinder them they marched over to the hay-mow and pitched into the sweet-clover hay. They first pick off the leaves and small twigs; but after they have trimmed off the stalks and can't get any more they eat up this dry brush, as it were. The doctor suggested something I never heard before—that, although the horses would eat the green growing clover with avidity, they *preferred* the cured hay; so he led one of them out in the yard and gave him a taste of some rank but tender shoots. Of course, he grabbed for this, but soon showed his preference for the cured hay in the barn.

Just now it occurs to me that M. M. Baldridge said *sheep* were exceedingly fond of sweet clover; and, by the way, we are just making a test of using sheep according to Vernon Burt's plan, to keep the apiary slicked up from grass and weeds, making sheep take the place of a lawn-mower. We have fenced off a part of our apiary with wire netting, and a ewe and her lamb occupy the inclosure. About the first thing the lamb did was to pick out all the sweet clover in the inclosure. Then it reached over the low fence for all that could be secured outside; and when the leaves and small brush were gone it began to devour the larger branches. I have seen so many cases of this kind I should like to see some cattle, horses, or sheep that can not be taught to eat sweet clover.

BASSWOODS; HOW LONG DOES IT TAKE TO GROW THEM SO AS TO YIELD HONEY?

Dr. Miller has a row of basswoods along his lane leading to the house. There are perhaps fifteen or twenty of them. They were loaded with bloom, and were roaring with bees at the time of my visit. Basswoods are not found in his locality unless they are planted; but they seem to grow just as well as here in Medina. I think his trees were planted fifteen or twenty years ago. One near the window where I write, planted 20 years ago, is now over a foot in diameter, and perhaps 40 feet high.

After a visit of less than 24 hours I took the train back to a station opposite St. Charles, then had a very enjoyable ride along the Fox River for eight miles, and in due time I was welcomed at friend Pike's pretty little home with his string of greenhouses back of the house. I wondered some why a florist who kept no bees was taking GLEANINGS and was so anxious to have me pay him a visit. Our veteran readers, especially those who took the *American Bee Journal* back in the time of Samuel Wagner, will remember the name of M. M. Baldridge, St. Charles, Ill. He is now an old gray-headed veteran, and has a very pretty apiary containing a limited number of hives, near friend Pike's. Well, a good many years ago friend Baldridge loaned his neighbor Pike (then a boy) some copies of GLEANINGS, and he read about my high-pressure gardening. When I published my book, "What to Do," he procured it and studied it over and over until he says he can tell what is on almost every page in the book, even now. While we were talking, a customer wanted something from the greenhouse; and in his absence his good wife confided to me that he used to bring the book along with him in his courting days, and insist that she listen while he read aloud some of A. I. R.'s choicest passages about what could be done with plants under glass and otherwise. It was this book that gave friend Pike a start in greenhouse work; and now one of his best customers is Vaughn's great establishment, of Chicago. Friend Pike grows vegetable-plants as well as flowers. I was pleased to see his boys at work on the plant-beds at the time of my arrival, with some cotton sheeting stretched over their heads. This, I believe, is for the double purpose of protecting the boys and the plants themselves from the fierce rays of the sun. Friend Pike has five pretty children. The older ones are already experts in making things grow; but he finds that the price of success is in being constantly on hand, and to be ready to stop in the middle of a breakfast or dinner to wait on a customer, if need be. One of his great specialties is rooted cuttings, as many of our readers kmow. Usually he is able to fill all orders promptly; but, once this season he had an order far beyond his ability, so he got another florist to help him out on it. Very soon a letter came from his customer something like this:

> *Friend Pike:*—The greater part of your shipment was just as it always has been, and every thing grew almost without a failure; but there was one lot of cuttings that were long-legged, and had very poor roots—nothing like what you have always sent before, and these were just about a total failure. Did you grow these poor things, or did somebody else help you to fill the order?

You see he has built up a reputation by years of hard work and practical experience. His most successful greenhouses are built with the short span to the south on the plan advocated by Thomas Slack, on page 185 of this journal, current volume. His houses are warmed by hot water run in cast-iron pipes put together with cement. The greenhouses and the home slope toward the street, and on the street is an electric carline. When I wrote that book, "What to Do," I recommended that your gardens should be adjoining a public road, so that their attractive appearance would induce every one who passed by to stop and look, even if he did not make a purchase. I did not think of adding that an electric carline would be better. In fact, they were not as common at that time as they are now.

In the evening friend Baldridge came over, and another bee-keeper who lived near, and we talked bees, sweet clover, etc., and finally the different political parties, until it was pretty close to midnight. I had a good nap after my wheelride, so I had the advantage of the rest in the way of sitting up. Well, I suppose I shall not be telling stories out of school if I say that our old friend Baldridge, and Mr. Pike also, are *Democrats*. The fourth one of our party was a pretty strong Republican, and we had an exceedingly friendly discussion. As I knelt down before retiring I thanked God for having given me a better view of our Democratic brethren and what they are trying to do; and it seemed to me, too, that I caught a glimpse of a good time coming when Democrats and Republicans—yes, and Populists and Prohibitionists—shall meet together, and not only say, but feel from the bottom of their hearts, "We be brethren." Of course, my two friends are pronounced temperance men, even if they are Democrats. Now, please do not feel hurt, anybody, when I say this: My education and bringing-up among Republicans has, perhaps, led me to fall in with the Republican idea that Democrats are *not* specially temperance people. I do not feel that way now, mind you. My two friends said they lamented, as much as anybody else, that the Democrats seemed to fear to say any thing or do any thing for temperance, because, like the Republicans, it might "hurt the party." Here is something I just clipped from the *Ohio Farmer:*

> Soon the political campaign will be opened, and we shall hear it from the stump and read it in our political journals, that unless "our ticket" is elected the country will be totally ruined. Don't believe it for a moment. The country is not going to be ruined by the election of either ticket.

The truth is, we have good pure clean men in all our parties, and enough of them, to save our nation; but they are all handicapped, and, I might almost say, fettered hand and foot, by the present unfortunate state of affairs; or perhaps I might put it another way and say by millionaire brewers and distillers. God helping us, deliverance is coming.

On the morning of the second day we took a wheelride down the river to Geneva. When I first heard the words "Geneva, Ill.," I kept saying them over to myself, wondering what bee-keeper lived there. Finally I thought of our veteran friend George Thompson, who has been an old standby at our conventions for years past; so friend Pike and I took a wheelride down the river. Friend Thompson was down in his garden amid the shrubbery on the river-bank, working with his bees; in fact, he was just taking off his first filled and capped sections of honey. When I stood before him and burst out laughing to see his astonishment (for he had had no notice of my coming) he put down his tools, and, after shaking hands, gave me, I think, the warmest reception I ever received in any of my travels. He put both arms around me, and gave me such a hug I did not know but he was going to smash me up, bear fashion. After our wheelride we were naturally a little thirsty; and while he went to his cupboard he shook his finger at me playfully, saying, "There, there! you need not be afraid, Bro. Root. I shall offer you nothing to drink that will trouble your conscience." I have since wondered how it was that a pitcher of lemonade happened to be just there at that time; but it hit the spot exactly, and I don't know but I shall have to take back a little what I have said about hot water. There are times and circumstances during a hot summer day when lemonade seems to fill a "long-felt want" as nothing else does in the world. Bro. Thompson is a stanch Republican, and I was glad to hear him tell of our President's many good qualities. He lamented, like the rest of us, the canteen disgrace, but ventured to say that the President may have had difficulties in the way of doing as he wanted to that we knew nothing about. However, when I finally told him I might, perhaps, overlook it all if it were not that culminating point where he tried to make the delegation of women from the W. C. T. U. believe that he *supposed* the temperance people intended by their law that the canteen business should *keep right on*, friend Thompson was honest enough, *then* and *there*, to admit, as every Republican or anybody else should admit, there is a time when forbearance ceases to be a virtue.

In order to strike Vaughn's greenhouses I took the train again next day for a station named Maywood. From there I was to wheel it across the country eight or ten miles, as nearly as we could guess by looking on the map, to see Vaughn's greenhouses, about fifteen miles out of Chicago. My ticket was purchased, and my wheel checked for Maywood; but when we got to Geneva we were informed that all should change cars. I saw a man taking my wheel from the baggage-car, and told him to be sure to get it on the train that was just ready to start. He looked at me as if he thought I was meddling; but, notwithstanding my suggestion, when the train began to move he was just picking the wheel up from his truck to put it in the baggage-car, and, to my dismay, off went the train, leaving him on the platform with the wheel in his hands. This was about noon. The conductor told me I would have to wait at Maywood till 5 o'clock to get my wheel; and as this would knock out the whole afternoon, and prevent my visiting Vaughn's greenhouses, I remonstrated somewhat. He replied he could not wait all day for any baggage-man with such slow motions as that fellow. Now, I was not angry at all, but I remonstrated because the conductor could not hold the train long enough to set the wheel in the car. Finally he got very red in the face, and talked pretty roughly. At this juncture I concluded that what could not be cured would have to be endured; and, to tell the truth, one of my favorite passages of scripture began to push its way into my mind, especially that part of it which says, "Pray for them for which despitefully use you and persecute you." I did not expect my prayer to be answered; in fact, I am ashamed to say I hardly ever do, even when I follow the dear Savior's directions as I did then. I stopped so abruptly, and took it so meekly, the conductor must have been a little surprised, for he came back after a little while and sat down beside me and said he was mistaken in saying I would have to wait till 5 o'clock to get my wheel. Said he, "This train does not stop at Maywood, but the next one does. You get off at the next station, wait for the train after this, and you will find your wheel on that train, and reach Maywood a little after 2 o'clock.

In due time the train brought up at the station where I was waiting; and after catching a glimpse of my wheel in the baggage car I jumped aboard with a light heart. Imagine my consternation, however, to see a fellow standing on the platform with *my wheel* about as soon as the train had got under fair headway. I called to him that *that* wheel was to be put on that train. He replied he had orders to take it off, and I was in a stew again. In fact, I meditated jumping off the train while it was under pretty good motion, for I could not be happy just then and there without that wheel. Pretty soon I became settled again, and tried to think of some more scripture texts to fit the occasion. Then the conductor came along and informed me that *that* train did not stop at Maywood either—that I would have to get off at the next station and wait for a train later, where I would find my wheel. Now, the above little incident illustrates several things. First, the great railroads that run in and out of Chicago like the spokes of a wheel are running trains one after the other every few minutes. Some stop at the little stations, and some do not. Another truth is, at least *some* of the railroad men know what they are doing, even if one conductor should not; and if I had kept my check in my pocket, and simply obeyed orders, without getting into a fret, my wheel and myself would both have been landed at Maywood a little after 2 o'clock, just as the agent told me who sold me the ticket. When I got on the platform at

Maywood, and got hold of my trusty wheel once more, I felt like—well, say like a little girl who has lost her doll baby, and recovered it after several trying experiences. We are, all of us, but children of an older growth, any way.

The first person I met in Maywood was a boy of about sixteen or eighteen, smoking a cigarette, and holding a wheel by his side.

Said I:

"My young friend, I see you ride a wheel. Perhaps you can tell me how far it is to Western Springs."

He replied that he never heard of such a place.

"Why, Western Springs is where Vaughn the great florist has so many greenhouses. Surely there is such a place near here."

Again he replied that he never heard of Vaughn nor of any greenhouses.

"Well, then, will you please direct me to a bicycle repair shop? They will probably know all about it."

He replied he did not know of any place where they repaired bicycles.

"Oh! then you do not live in town?"

He replied that he had lived there all his life. I do not know but I got a little stirred up again. Said I:

"You say you have lived here all your life, and you ride a wheel, and yet do not know whether there is a repair shop in town or not."

He still declared he did not. Now, I relate this incident to show you what kind of fruit cigarette-smoking produces, or what sort of *young men* it produces, if you choose. I found a repair shop right in sight, and they told me Western Springs was off south somewhere, about seven or eight miles; so I followed the street-car line off south. Nobody knew much about Western Springs; but a traveling notion-dealer said I must turn and go east about a mile, when I would come to a saloon, and then turn south again, and he thought at this saloon they could tell me more about it. Now, this street-car line ran out to a sort of beer-garden where there were any number of saloons; but there did not seem to be a man or woman in the saloons or out who ever heard of Western Springs. I inquired of people on the street and of people inside, but they all seemed to be soaked in beer everywhere. At one place I found a gray-haired woman, the only occupant of a saloon. She sat near a table, with a pitcher of beer. She did not know any thing about such a place—never heard of Vaughn nor of any greenhouses. A man with a bloated red face came in, and he did not know any more. The woman who kept the bar said she thought she had heard of such a place somewhere. I tried saloon-keepers and other people with the same results. Finally, in sheer disgust, my wheel and I started off south, without instruction. I found a market-gardener loading up cabbages. *He* was in his "right mind," and had some sort of head-piece on top of him. He explained to me that Western Springs was only eight or ten miles from Maywood, but that I should have to go a good deal further to get there, on account of the river.

I have given you a pretty sad description of the inhabitants in the suburbs of Maywood. Permit me to add, however, that they have most beautiful roads along the street-car lines and past the saloons. Perhaps the beer business built the beautiful roads. When I came near a town called Riverside things looked better, and I fell to wondering whether the people of Illinois knew there is a place so beautiful as Riverside. It is all green lawns and asphalt streets. There are no fences, no weeds — nothing but handsome residences, lawns, flowers, and parks. I was in a hurry or I would have explored a little more. When I crossed the river the saloons and bloated faces were in evidence again, and nobody knew of any thing. When I neared Western Springs I passed through a town the name of which I forget, with most beautiful graded streets planted with trees, and every thing in regular suburban style, all but the *houses*. I felt amply repaid for all my trouble and pains that afternoon when I got a glimpse of Vaughn's great string of greenhouses, some time between four and five o'clock. But I shall have to defer, till the next issue, an account of my visit there.

THE STARVING ONES IN INDIA.

A Report on the Spot, from a Missionary who Takes Gleanings.

My dear Mr. Root:—For the last four months I have been going to write to you, but I have been too busy in famine-relief work; but, time or no time, I must write you. I received your paper for several months, which I was glad to get. I received your letter also; but since receiving it I have been transferred from Kaira to Sanand, which is a new station opened by our mission.

To take the cattle as a whole, ninety per cent of them are dead, if not more. There are very few wells in this district, hence very little irrigation. The small irrigated barley harvest which has just been reaped has been a costly one to hundreds. Many have spent 50 rupees (a rupee is equal to 33 cents), others more, in raising their crops, only to get about 15 rupees in return. This was owing to the very cold weather experienced here this last cold season. So not only has the monsoon crop failed, but the cold-season crop also. Gouari, a medium-sized white grain, is usually sown at the beginning of the hot season; but very few have in this district ventured so soon, being afraid, undoubtedly, that it would be labor in vain, on account of the dryness of the land and the weakness of their cattle. You will see from the above that there is no hope of getting any food stuff from within until next October; and until then all food stuff must come from without.

The people who have thus far stayed in their villages to try to raise a small crop have sold and pawned every thing to buy food with. Many of them are now pulling the doors out of their houses, also the tiles and beams off the roof, and are selling them for food; and in going round from village to village one of the saddest sights one sees is some of the women and young girls almost nude, and some quite. I know of whole families of from five to eight in number from whose clothes, taking them all together, one could not get a yard of good cloth. I have had one case brought to my notice where the poor woman could not leave her house. I have seen others who have had to wear their bedding around themselves during the day. Mothers, being half starved themselves, have no nourishing food for their suckling babes; hence the children are seen by the score dying at their mothers' breast. These mothers, with tears and sorrow, implore us on behalf of their little ones. Truly it is Matthew 2:18 over again, only instead of the little ones being killed by a cruel king a cruel famine is taking them off. "In Rama was there a voice heard, lamentation and weeping, and great mourning, Rachel weeping for her children, and would not be comforted because they were not." Oh the young children that we see dying every day! Here they are, mothers and fathers around us the whole of the day, nothing but skin and bone, pleading piteously for food. Only when we lay our heads on our pillows at night are we free from these heartrending sights, and sometimes not even then, for the sights and sounds of the day often appear again in our dreams. I do not write of those people found in the bazaar every day, but of bona-fide villagers. I have already seen several human beings being eaten up by dogs and birds; in fact, this sight is of almost daily occurrence; and finding dead bodies lying by the wayside is quite common. These poor creatures sit down by the wayside to rest; but, being too weak to raise themselves, this is their end. We have a burning pile kept going day and night. Usually six bodies are burned together; and as days go by it will get worse. One of the most conspicuous places in each village is the spot allotted for the burning pile.

We are at present giving relief in the following ways:

Selling maize at a very cheap rate, 5 pounds for 3 annas, or one pound for 1¼ cents. We are selling daily from 200 to 320 lbs. Some of the people are coming a distance of 20 miles to buy; and, so far as I can judge, this is one of the best forms of famine relief.

In my visits to the villages I take a small quantity of rice with me on the camel or in the cart; visit from house to house, find out the sick and very needy ones, give them a ticket and enough rice to feed them until the next day, when they come into Sanand and present their ticket to Mrs. King, who gives them a supply for two or three days, according to the distance of the village. This is entered in a record-book, and at the end of the second or third day they get another supply, just enough to keep life in them. Widows and fatherless children are treated in this way.

Let me describe to you some of the sights found in these visits. I usually go to the chief man of the village, who is responsible to the government for the peace of the village, but who is himself, for his greed of filthy lucre, the greatest peace-breaker. Having asked him how things are in his village the answer generally is, "As the year is, so the people are," which is perfectly true; for a year of famine means a famished people. My notice is drawn to a family of the potter caste, who had, a day or two before, given up all hopes of pulling through. I found them, five in number, all shut up in their house. Only one was able to stand. Food was at once given to them. A day or two after, the father died; the mother will go, for the poor creature has been without food too long for one to do much for her; two of the children are doing fairly well.

Visit No. 2 found the father lying on a cot, burning with fever, with three little motherless children sitting by the side of it. This man was the owner of 40 head of cattle. Every one has died of starvation. The poor mother also went the same way about six weeks ago. There sat the three poor little bony creatures slowly but surely going the way of their mother—no food.

Visit No. 3 finds a widow with five children. It is impossible for three of the five to live. A girl of 14 put her hands together and looked up piteously into my face as I bent over her cot, and pleaded for food, which was quickly given.

Visit No. 4 found a widow and her two children sick with fever—had had no food for two days.

Visit No. 5, again a poor widow with two sons. The sight of the poor creature turns one faint. She had gathered and sold wood to support her children. Her strength has run out, and here she lies, I fear, never to rise again.

The above is only an outline of thousands of cases in the surrounding villages.

If you feel led to publish this letter you may do so. I leave it with you; but may God never allow me to see another famine. Here we have to live and have our being in the midst of it, so we know the awfulness of it. Mr. Root, it is impossible to draw a picture too dark. I shall send you a few photos as soon as I can get them. T. F. KING.

Sanand, Gujarat, India.

On receipt of the above letter I decided at once to send a check for $100, and Ernest for $25. This $125 was sent directly to Rev. T. F. King; the remainder, $8 00, was sent to Frank H. Wiggin, as heretofore. Lest some of the friends be discouraged, and conclude there is no help for the things described, permit me to add that we have good authority for stating there is no more fertile soil in the world than that of India. In other words, an acre of ground there, with proper facilities for irrigation, will keep as many people from starving as an acre almost anywhere else in the world. All that is needed is to construct reservoirs, and go to work exactly as we are now managing the Great American Desert; and work of this kind is already in progress on a large scale, the people being paid sufficient wages to keep them alive while the reservoirs and irrigating canals are in process of construction. The responsibility of putting an end to such suffering rests directly on the shoulders of each one of us. Dear brother or sister, whenever you waste a particle of food, or pay out money for things you can well get along without, for God's sake remember the starving brothers and sisters in India, as described above, and lend a helping hand with whatever amount you can spare.

INDIA RELIEF FUND.

A. I. Root, Medina, Ohio	$100 00
E. R. Root, " "	25 00
Mrs. Warner, " "	1 00
Henry Zeiner, Bertig, Ark	1 00
Harriett Herr, Williamsville, N. Y	4 00
Esther Herr, " "	1 00
John S. Snearly, " "	1 00
	$133 00

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GOLDEN YELLOW ITALIAN QUEENS.

Now is the time to improve your strain of bees. The queens I offer are the finest in the land. I sold quite a number this season, and all are delighted with the quality, and so will you be. at 75c each by return mail.

60-lb. Cans. Two in a Crate.

I have 400 crates of 2 60-lb. cans each that were used once, are nearly as good as new. I offer, until this lot is exhausted. at 50c per crate, or 10 crates at 45c each. New crates of 2 60-lb. cans each, cost 85c. Speak quick. Root's goods at Root's prices; also Muth jars. Send for catalog. HONEY AND BEESWAX WANTED.

C. H. W. Weber, 2146 Central Ave., Cincinnati. Ohio.

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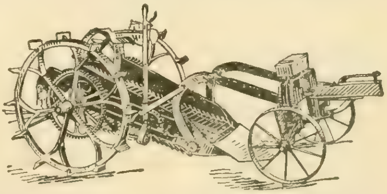
It is a slow and expensive way. The cheapest, quickest, and easiest way is to USE THE IMPROVED



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It gets them all, no matter how deep or shallow. Our book explains how. The book is free. Write for it now. DOWDEN MFG. CO., Box 23, Prairie City, Iowa.

Albino Queens. If you want the most prolific queens; if you want the gentlest bees; if you want the best honey-gatherers you ever saw, try my Albino queens by return mail. Untested, 75c; warranted, $1; tested, $1 25. J. D. GIVENS, Lisbon, Texas.

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That is what every one says of the **New C. Von Culin Incubator** (and Brooder). It has all the latest improvements which have been found of any merit. **Will Hatch Every Hatchable Egg.** Self-regulating, safe, sure. Send for illustrated catalog and price list of Incubators, Brooders, etc., free. Poultryman's Plans and catalog, 10 cts. Address

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This cut represents our combined circular saw, which is made for bee-keepers' use in the construction of their hives, sections, boxes, etc. ***Machines on trial.*** Send for illustrated catalogue and prices.

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The above cut shows one of our small Planers, of which we make twelve different styles and sizes. Also large Planers, Band Saws, Buzz Planers, Moulders, Wood Lathes, and all kinds of

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Shown in use on a window screen, reduced in size one-half, and having a part of the exterior broken away to give a view of the springs, is a perfect device for getting the bees out of extracting-rooms, house-apiaries, piles of supers, etc. It permits the bees to pass out through it easily and rapidly, yet it absolutely prevents their return or the entrance of the most persistent robbers. Without a trial it is difficult to realize its value to the apiarist.

Mr. Kretchmer says of it: "I hasten to express to you my admiration for an article I have been waiting for so long a time. It is just the thing." And all who have used it similarly commend it,

DIRECTIONS.—Tack the escapes as shown in the engraving over holes punched through the wire cloth at the upper corners of each window on which they are to be used, or over holes bored wherever convenient, if the enclosure is without windows.

PRICES: Each, 25c; per dozen, $2.75, postpaid.

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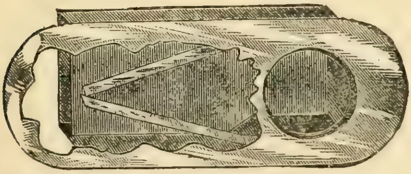

The Porter Spring Hive-escape for getting the bees out of the super automatically before removal from the hive, which is similar to the escape shown above, is one of the most popular and useful apicultural implements of the day, and its friends have been gained by substantial merit alone. At the Columbian Exposition it won the highest and only award given an escape. Leading bee-keepers the world over use these escapes and give them their unqualified endorsement. Directions for use with each escape.

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We can not too highly recommend them, We intend to use them in all our apiaries hereafter.—Chas. Dadant & Son, Hamilton, Ill.

I have 85 of them in use and don't see how I could possibly get along without them.—John Nippert, Phoenix, Ariz.

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A live, up-to-date Farm Journal with a General Farm Department, Dairy, Horticulture, Live-stock, Poultry, Bees, Home and General News. The Editor has had practical experience in every department of farm work. To introduce the paper, it will be sent to New subscribers one year for 25c. Sample copies free. Best Advertising Medium in the Central West. Clubbed with *Gleanings* for $1.00.

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WANTED.—To buy 500 bu. No. 1 dry rice popcorn.
GEO. G. WILLARD, 270 Pearl St., Cleveland, O.

WANTED.—To exchange one extractor, Root make, good as new, 2-frame; one honey-vat that holds 2400 lbs.; a lot of Root chaff hives; two comb baskets, and one uncapping-can. I should like any thing useful in the grocery or any thing else.
G. G. GREEN & SON, Lyons, Ohio.

WANTED.—To exchange for anything useful in bee business, tested or untested Italian queens from imported or golden mothers; bred 3¼ miles apart. Also want pure black-and-tan rat pup.
J. M. DAVIS, Spring Hill, Tenn.

WANTED.—To exchange modern firearms for flint-lock guns and pistols of all descriptions.
WM. S. AMMON, 216 Court St., Reading, Pa.

WANTED.—To exchange fine orange-grove and home in Florida for an apiary well located, or real estate. Full particulars asked and given.
M. W. SHEPHERD, Mannville, Putnam Co., Fla.

I want to say the queen I got of you last September as a premium to GLEANINGS is one of the best. Her bees are all alike, and very gentle and fine as to work. and staying on combs, etc.

I want another, and inclose $1 00. I'm getting sick of the so-called stingless bees. They are the worst I ever saw to chase one all over the yard.

Hallowell, Me., June 16. E. P. CHURCHILL.

H. G. Quirin, the Queen-breeder,

is, as usual, again on hand
with his improved strain of

Golden Italian Queens.

Our largest orders come from old customers, which proves that our queens give satisfaction. We have 12 years' experience breeding queens; no bee-disease in our locality; queens are sent promptly by return mail, with safe delivery guaranteed.

PRICE OF QUEENS AFTER JULY 1:

	1	6	12
Warranted	$ .50	$ 2.75	$ 5 00
Selected, warranted	.75	4.00	7.00
Tested	1.00	5 00	9.00
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Extra selected tested—the best that money can buy	3.00		

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STRONG TESTIMONY

in Favor of

Moore's Strain of Italians

Frank Benton, of Washington, D. C., whose name is familiar to all progressive apiarists, writes me, Feb'y 20, 1900, as follows:

"I have several times, in the course of correspondence, and in conversing with bee-keepers, had occasion to answer the question: 'Where can the best Italians be got?' It is, perhaps, not an easy thing to say, with certainty, but at least I have felt I might be able to tell where GOOD ones could be obtained. A number have referred to you, for, although I have not tested your stock personally, I thought I knew pretty well, from general reputation, its character. A bee-keeper near here—Mr. Geo. A. Lamphear, of Vienna, Va.—who got some queens of you on my recommendation, is so well pleased with them—in fact, gives your bees such a good recommendation to me for gentleness and working qualities, particularly their working on red clover, that I thought I would like to try some myself."

I was not aware that Mr. Benton was recommending my stock until I received the above letter. Such testimony as this certainly has great weight. Don't you think so? My stock is the result of 21 years of careful breeding, by selecting the best honey-gathering stock each season from which to rear queens, and crossing them as far as possible with drones not akin. Prices for July: Warranted queens, 75c; 6 for $4.00; 12 for $.750. Select warranted, $1.00 each; 6 for $5.00; 12 for $9.00. Strong 3-frame nucleus, with warranted queen, $2.50. Safe arrival and satisfaction guaranteed.

CIRCULAR FREE.

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For Sale or Exchange.

40 acres, well improved; good house; cellar; three barns, hog-sheds, pens, and other out-buildings; hog-tight wire fence; plenty of good water; plenty of small fruit, best varieties; apple, pear, peach, plum, and cherry, of many varieties (in bearing). Have 50 stands of bees in new dovetailed hives, with all modern improvements, to sell. A very desirable location. 4 miles north of Atwood. Price reasonable, terms easy.

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1200 FERRETS FOR SALE. Small, medium, and large sized; some trained. **First-class** stock. New price list free

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Our Bees are Busy

now carrying loads and loads of pollen and sweets from the flowers to raise the thousands of new bees for the coming honey crops. We are busy with the orders for Hives, Sections, Foundation, Comb to enable the bees to spread themselves over a surface for rapid work.

Many implements and fixtures to help the people to handle the bees conveniently and with profit.

Drop us a postal card and we will send a catalog of the best and latest Bee hives, etc.; contains also instructions for successful managing of bees for profit.

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If interested in buying groceries, ask for our wholesale list, and it will also be mailed.

We have sold several carloads of Root's hives and supplies, and can make you the best prices for quantity ordered besides a saving of freight in points adjacent to Evansville.

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This foundation is made by an absolutely non-dipping process, thereby producing a perfectly clear and pliable foundation that retains the odor and color of beeswax, and is free from dirt. Working wax into foundation for cash, a specialty. Beeswax wanted. A full line of supplies at the very lowest prices, and in any quantity. Best quality and prompt shipment. Send for large illustrated catalog.

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Made of sheet brass, which does not rust or burn out; should last a lifetime. You need one, but they cost 25 cts. more than tin of the same size. The little open cut shows our brass hinge put on the three larger sizes. No wonder Bingham's 4-inch smoke-engine goes without puffing, and does not drop inky drops. The perforated steel fire-grate has 381 holes to air the fuel and support the fire.

Heavy tin smoke engine, 4-inch stove per mail, $1.50; 3½-inch, $1.10; 3-inch, $1.00; 2½ inch, 90c; 2-inch, 65c. Bingham smokers are the originals, and have all the improvements, and have been the standard of excellence for 22 years. Only three larger ones brass.

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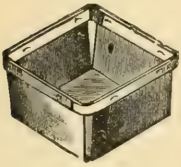

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Order your supplies now before the busy season catches you. Price list free. Address

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I have had fifteen years of experience in producing honey and rearing queens; and I am breeding queens from a queen procured last spring from J. F. McIntyre, of Sespe, California. He describes this stock on page 12 of Gleanings for Jan. 1st, as filling the supers when other colonies were actually starving. The drones in my yard are from excellent stock—such as that of J. P. Moore, of Kentucky. I rear queens by the Doolittle method, send them by return mail, and guarantee safe arrival, purity of mating, and satisfaction, at 50 cts. each, in any quantity. Money refunded if queens are not satisfactory. Send for circular.

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QUEENS. GOLDEN ITALIANS. Unexcelled for business, beauty, and gentleness. Bred from the best of stock obtainable. Untested, 60c each; 6, $3.25; 12, $6.00. Tested, $1.00 ea. Extra fine breeding-queens, $2.00 each. E. A. SEELEY, Bloomer, Ark.

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Say! Improve Your Bees.

Did you know that we are rearing golden Italian queens from our famous $100 breeder Victoria? Stock unsurpassed for beauty, gentleness, and honey-gathering. Queens very prolific; bees do not crowd broodnest with honey; swarm very little, and enter supers readily. Also 3-banded queens from our fine breeders, Jewell and Beauty. Stock hardiest, gentlest, and best strain in the world. Prices, either race for the rest of the year, unt., 75c; 6 for $4.25; select warranted, 25c extra. Tested, $1.25. Holy Lands same price. Special discount in quantities. Circular free.

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W. H. LAWS, Round Rock, Texas.

Queens.

Use No Smoke. **It is not necessary** with the **Sweetheart** strain of bees. A postal card or letter will bring my descriptive circular and price list of these **gentle hustlers** and other strains. I am booking orders for them now, which will be filled in the order received. Don't delay.

A. J. WRIGHT,
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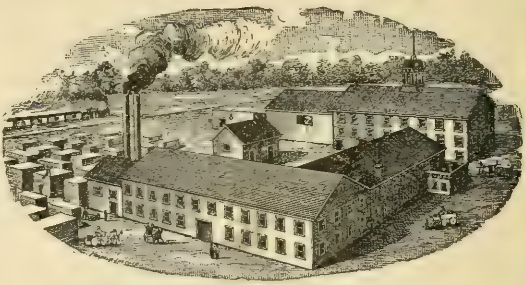
We have the best-equipped factory in the West. Capacity, one carload a day; and carry the largest stock and greatest variety of every thing needed in the apiary, assuring BEST goods at the LOWEST prices, and prompt shipment. We want every bee-keeper to have our FREE ILLUSTRATED CATALOG, and read description of Alternating Hives, Ferguson Supers, etc. *Write at once for a catalog.*

We also manufacture TANKS of either wood or galvanized steel, all sizes, any form, and for all purposes. Price list free.



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$10.00 REWARD

To the party who sends me the most money for bees and queens between April 1 and Nov. 1, 1900.

HIGH-GRADE STOCK
BY RETURN MAIL
MY SPECIALTY.

One untested queen, 75c; 6 for $4.25; 12 for $8.00.

One tested queen, $1.25; 6 for $6.50; 12 for $12.00.

One 1-frame nucleus, $1.00; 6 for $5.50; 12 for $10.00.

One 1-frame nucleus and queen, $1.75; 6 for $9.00; 12 for $17.00.

Two, 3, and 4 frame nuclei, 65c per frame to above prices for extra frames wanted.

For each dozen queens or nuclei ordered at above rates I will mail in August a **SELECT TESTED QUEEN.**

ROOT'S GOODS at ROOT'S PRICES,
Plus carload rate freight.

Bees, Honey, and Beeswax bought and sold.

W. O. VICTOR,
Wharton, Texas.

Don't Buy Supplies

Until you see my 40th annual catalog. A full line of hives and fixtures best adapted to our New England climate. Also best brands of **Comb Foundation and Section-boxes.** I have also made arrangements to keep quite a general stock of

A. I. Root Co.'s Goods at Their Prices.

Parties desiring these goods can get them of me, and **Save Freight Charges.** Bees, Queens, and Nucleus Colonies from the **very best strains** in America. A 40-page illustrated catalog free. Address

W. W. Cary,
Lyonsville, Mass.

I. J. Stringham, 105 Park Place, New York,

will gladly mail you an illustrated catalog of Apiarian Supplies upon request. Among the seasonable articles are Honey-cans, Shipping-cases, and Cartons.

Untested Italian Queens, 60 cents each; 1 dozen, $6.00. Tested Italian Queens, $1.00.

Apiaries, Glen Cove, Long Island.

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Honey Column.

CITY MARKETS.

ALBANY.—No new honey in this market as yet. We expect some in a few days. Weather is too warm for any demand. Beeswax steady, 26@28.

MACDOUGAL & Co.,
Successors to CHAS. MCCULLOCH & Co.,
July 19. Albany, N. Y.

CHICAGO.—There is no change in the market since last quoted, with the exception that new comb is coming forward more freely, and sells at 15 for best lots.

R. A. BURNETT & Co.,
July 19. 163 S. Water St., Chicago, Ill.

NEW YORK.—Comb honey. There is a little stock on our market, and practically no demand through our channels, just at this time, and no doubt caused largely on account of the risk in shipping during the warm weather. We usually do little on comb honey before September. We do not advise the shipping of extracted honey just at this time, for the reason that there is not much demand, and quite a liberal supply, although with our usual trade at this time of the year it would not take long to clean up. We can hardly report reliable quotations at this time, but we certainly must look for lower prices than last season.

FRANCIS H. LEGGETT & Co.,
Franklin, West Broadway, and Varick Sts.,
July 17. New York City.

MILWAUKEE.—The receipts of new comb honey have been very fair the past week, and more in quantity and better in quality than usual at this date. The demand is very moderate, and sales small, and we can not expect quick sales for honey while the fruit is so plentiful; yet we expect a good trade and consumptive demand later on. We now quote fancy 1-lb. sections, 16@18; A No. 1, 1-lb. sections, 15@16; dark or amber, 1-lb. sections, 13@14. Extracted, either white or amber, nominal, 6@8. Beeswax, 25@26.

A. V. BISHOP & Co.,
July 21. Milwaukee, Wis.

CINCINNATI.—Shipments of extracted honey from the South are more numerous than a few weeks ago, but we find it hard to make sales, owing to a slow demand. I quote white extracted 7@7½; Southern extracted, 5¾@6½. Owing to quality, no comb honey on the market. Good demand for beeswax at 25@27.

C. H. W. WEBER,
Successor to Chas. F. Muth & Son,
July 20. 2146-48 Central Ave., Cincinnati, O.

KANSAS CITY.—We quote new No. 1 white comb, 14@15; No. 1 amber, 14; dark, 13; extracted, old, 6@6½; new, none in market. Beeswax, 22@25.

C. C CLEMONS & Co.,
July 20. Kansas City, Mo.

COLUMBUS.—None to quote. We shall be in the market for all grades of comb honey, either in local or carlots after September 1st, and producers will do well to correspond with us before marketing their crops.

EVANS & TURNER,
July 23. Fourth & Town Sts., Columbus, O.

WANTED, HONEY AND BEESWAX.—We have a tremendous and growing trade in this line, and should like to hear from all having such goods to sell in any part of the country, with quantity, description, and lowest cash price.

THOS. C. STANLEY & SON, Fairfield, Ill.

FOR SALE.—Basswood honey, both comb and extracted. Write for prices, stating amount wanted.

ED. WILKINSON, Wilton, Wis.

WANTED.—Comb and extracted honey. Will buy your honey, no matter what quantity. Mail sample with your price expected, delivered Cincinnati. I pay cash on delivery.

C. H. W. WEBER, Cincinnati, Ohio.

WANTED.—Comb and extracted honey. State price, kind, and quantity.

R. A. BURNETT & Co.,
163 South Water St., Chicago, Ill.

WANTED.—Quantity lots of comb and extracted honey.

B. WALKER, Evart, Mich.

FACTS About Bees.
REVISED EDITION.
How to get
GILT-EDGED HONEY
Send 2c stamp to
THE A. I. ROOT CO.
Medina, Ohio,
or F. Danzenbaker,
Box 66, Washington, D. C.

Universal Satisfaction.

Each mail brings letters of highest commendation from my patrons, while not one complaint has been entered.

"Your queen reached me safely, and in good condition. I think she is a *perfect beauty*. I am anxious to get three more of your strain that I may give this excellent cross a fair trial. Your promptness in mailing the queen so soon after receiving my order has commended your establishment to me. — HUGH C. HENRY, M. D., Drake's Branch, Va., July 4."

"The 3 queens you sent me on the 3d arrived last evening. I am much pleased with them. If they are as industrious as beautiful you certainly have a good strain of bees. A son of B. Taylor ought to know what good queens are. I have been getting *yellow* queens from ——, but I prefer northern bred.—Dr. Frank Parker, Abilene, Kans., July 6."

You take no chances when you get queens of the "Superior"-Doolittle cross. 75c each; $2.00 for 3; $7.50 per doz.

JEWELL TAYLOR, Forestville, Minn.
Money-order Office, Spring Valley.

Two Good Things.

THERE are two good things that I am working hard to sell to bee-keepers. They are the Bee-keepers' Review and a superior strain of bees. I will candidly admit that the hope of profit is the mainspring that moves me in this course. At the same time, it is none the less true that my patrons receive greater benefits than I do.

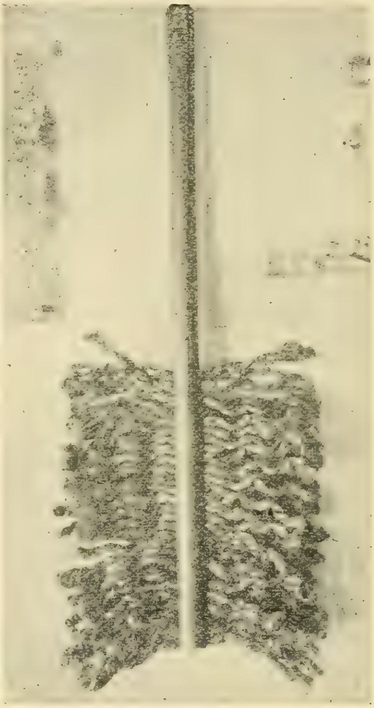
The Review is a bright, clean, handsome, progressive, wideawake, up-to-date, practical journal, without a dull line in it. Time and again has some subscriber written that some article was worth to him ten times what the Review cost him.

Allow me to mention just one article from each number that has been issued this year. Remember that there are many other most excellent articles in each issue.

JANUARY has a five-page article by Miss Pickard, of Wisconsin, on the production of extracted honey. She began with taking bees out of cellar, and went over the ground thoroughly until the bees were again in the cellar. The frontispiece shows her out-apiary, with wooded hills for a background and a little brook for the foreground. There is a portrait of Miss Pickard, a description and picture of her bee-brush, the best thing of the kind that I have ever seen, also a picture of her wintering-cellar with the boys carrying in the bees.

FEBRUARY has an article from Herbert Clute, who was brought up in the bee-business by that old veteran, Frank McNay, and who, during the five years that he has been in business for himself, has produced about 75,000 lbs. of extracted honey, built up a nice apiary, honey-house, and wintering-cellar, all of which are illustrated and described.

IN MARCH I attended the convention of the Wisconsin bee-keepers, held at Madison, wrote up all of the bright things that were said, and printed them, together with a full-page illustration of the men who said the bright things. There is also a cut and description of the best section-press and foundation-fastener I have ever seen.


THE PICKARD BEE-BRUSH.
From January Review.

THE APRIL frontispiece showed the wintering-cellar and apiary (300 colonies) belonging to John F. Otto, of Wisconsin. For 14 years Mr. Otto has devoted himself exclusively to the production of comb honey, and, in the April Review, he describes the novel and practical methods whereby he *invariably* secures very populous colonies during the honey harvest.

With this issue of the Review I began offering a prize of $5.00 for the best article. H. D. Burrell, of South Haven, Michigan, got the prize on an article entitled, "The Production, Care, and Sale of Extracted Honey." It is one of the best articles I have seen on the subject.

THE MAY edition was a special-topic number devoted to queen-rearing, containing numerous illustrations and more than 50 pages. The prize was awarded to W. H. Pridgen, of Creek, N. C., who furnished one of the most comprehensive articles on queen-rearing that it has been my lot to read. Beginning with this issue a new cover was put on the Review. It is a bright beautiful goldenrod in color.

JUNE opens up with a profusely illustrated article by that king of bee-keepers, N. E. France, of Wisconsin. He manages his out-apiaries in the most systematic manner of any bee-keeper whom I have visited, and in this article he describes not only his syste, but them hive, implements, and methods that have enabled him to produce 300,000 pounds of extracted honey at the lowest possible cost.

In this issue was discussed the question of "Which is the most Hopeful Field?" That is, in which direction is commercial bee-keeping susceptible of the greatest improvement? Some very interesting views were brought out. J. E. Crane, of Vermont, was awarded the prize.

The Review is only a monthly, and the price is $1 00 a year; but when it comes to the matter of furnishing valuable, practical information, such as is really helpful to bee-keepers, it is not one whit behind its competitors. It is boiled down. Some subscriber often writes: "It is the one bee-journal of which I read every word."

SOME SUPERIOR STOCK.

No experienced bee-keeper needs to be told that there is a difference in bees, and that superior stock in the apiary is fully as desirable as in the pasture or in the poultry-yard. If the surplus is increased only ten pounds per colony, by the introduction of superior stock it means a gain of 1000 pounds in an apiary of 100 colonies. While I have done much good by the dissemination of knowledge through the columns of the Review, I believe that I am now doing still greater good by sending here and there, all over this land, queens of a really superior strain of bees—a strain that has been developed by twenty years of the greatest care in breeding—by crossing and selection—from the best stock obtainable. Time and again have I tried queens of this stock, and always found their bees to be ahead of everything. They are gentle to handle. They store more honey than other strains that I have tried. They cap their honey very white. They are hardy, and winter well. I have been selling this stock for only one year, but already reports are coming in telling how it has forged ahead of other stock. As a bee-keeper you can never invest a small sum of money to better advantage than by introducing some of this stock into your apiary.

The price of these queens is $1.50 each. This may seem like a high price, but the man who pays it will make dollars where I make cents; and when you come to read the conditions under which they are sold, they will not seem so high. The queens sent out will all be young queens, just beginning to lay; but as there are no black bees in the vicinity it is not likely that any will prove impurely mated. If any queen

SHOULD prove to be impurely mated, another queen will be sent free of charge. Safe arrival in first-class condition will be guaranteed. Instructions for introducing will be sent to every purchaser; and if these instructions are followed, and the queen is lost, another will be sent free of charge. This is not all; if at any time within two years, a purchaser, for any reason another is sent. If the queen proves a poor layer, or the stock does not come up to the expectations, or there is ANY reason why the bargain is not satisfactory, the queen can be returned and the money will be refunded, and the customer fairly well paid for his trouble. I could not make this last promise if I did not KNOW that the stock is REALLY SUPERIOR.

A COZY CORNER IN THE HOME APIARY OF E. FRANCE & SON. (*From June Review.*)

WHATEVER, is not satisfied with his bargain, he can return the queen, and his money will be refunded, and 50 cents extra sent to pay him for his trouble. It will be seen that the purchaser runs NO RISK WHATEVER. If a queen does not arrive in good condition, another is sent. If he loses her in introducing, another is sent. If she should prove impurely mated,

I said that the price is $1.50 each. There is only one condition under which a queen will be sold for a less price, and that is in connection with an advance subscription to the Review. Any one who pays $1.00 for the Review for 1900 can have a queen for $1.00. That is, you can have the Review for 1900 and a queen for $2.00. I am now filling orders by return mail.

W. Z. Hutchinson, Flint, Mich.

Queens on Trial.

In 1895 Mr. L. M Brown, 218 Tenth St., Sioux City, Iowa, bought 3 queens; in 1897, 12 queens; in 1899, 80 queens; this season, 95, all for his own use. Many of my customers of this year have bought queens from me for years, and tested dozens, scores, or hundreds of them. This means that the queens are GOOD ones, and satisfactory. We are now over our *rush*, and can fill orders for the BEST OF QUEENS *promptly*. Queens are carefully reared from one of Doolittle's best mothers. Cells are large and well fed; queens sent out are large fine ones that lay well. Any injured in transit, or unsatisfactory, replaced free. To induce a trial we make these prices: One queen, 60 cts.; 3 or more, 50 cts. each; select warranted, 80 cts.; extra select warranted, large yellow, $1.00; nice tested, $1.00; select tested, $1 50. A few nice young tested mixed, 3 to 5 band, from swarms, 75 cts. each. See ad's and circulars.

J. B. CASE, Port Orange, Fla.

Adel Bees Did it.

San Louis, Col., March 2, 1900.

Last spring (1899) I ordered queens from 5 different queen-breeders, and among them one from you. The bees from your (Adel) queen gathered more honey than the others all put together. (Signed) S. N. Smith, M. D.

Send for descriptive circular and full price List. Tested queens, each $1.50.

HENRY ALLEY, : Wenham, Mass.

QUEENS. GOLDEN ITALIANS. Unexcelled for business, beauty, and gentleness. Bred from the best of stock obtainable. Untested, 50 cts. each until Nov. 1st. Tested, $1.00 ea. Extra fine breeding-queens, $2.00 each. E. A. SEELEY, Bloomer, Ark.

Wm. A. Selser, Honey Expert,

Office of the A. I. Root Company.

10 Vine St., Philadelphia, Pa.

Headquarters for Bee-keepers' Supplies in Chicago.

DON'T FORGET THAT

When you are needing anything for the care of your bees or honey.

Shipping-cases and 60-lb. Tin Cans.

We have a good supply of SECOND-HAND 5-gallon (60-lb.) cans, which are practically as good as new. Prices while they last—10 boxes of two cans each, 50 cts. per box; 20 boxes or over, 45 cts. each; 100 boxes, 40 cts. each. New cans are almost twice these prices.

Send for FREE CATALOG and sample copy of the weekly American Bee Journal.

Address

GEORGE W. YORK & CO., 118 Michigan St.,
CHICAGO, ILLINOIS.

1881 PAGE & LYON MFG. CO. 1900

We manufacture a full line of the latest BEE-SUPPLIES.

Our motto is, "Perfect Goods and Prompt Shipment."

Send for our new free illustrated catalog.

PAGE & LYON MFG. CO., New London, Wisconsin.

GLEANINGS IN BEE CULTURE

A Journal devoted to Bees and Honey and Home Interests.
Illustrated Semi-Monthly
Published by The A. I. Root Co.
$1.00 per Year. Medina, Ohio.

Vol. XXVIII. AUG. 1, 1900. No. 15.

STRAY STRAWS FROM DR C. C. MILLER

STRAWBERRIES seem to last longer than years ago. This year the first picking was June 4, and the last July 11—38 days. [Just so here.—ED.]

UNCLE LISHA, a man who has experimented so carefully as you have with queen-cell cups has surely tried transferring cocoons. Please tell us about it.

TO SECURE the best results in queen rearing, a colony must be strong enough to swarm, and honey must be coming in every day, either from the fields or by feeding. That's not original. Uncle Lisha said it (p. 572), but it's worth repeating. [Just so. You can not give that point too much prominence.—ED.]

TO FIND A QUEEN, separating combs so bees make a lost call, as on p. 575, works in this locality, but it takes a good many minutes. But I never tried the kind W. W. Case gives, to open the hive rather roughly, and I suspect that would hasten matters. You may be sure, Mr. Editor, it will give you more than an inkling in every case, if you wait long enough.

I SEE YOUR POINT, Mr. Editor, on p. 559, and it's a good one. Yes, if the bees preferred young larvæ, why didn't they start more of them at first, before they got so old? I don't know. That shows bad management, but it doesn't really prove that they preferred older larvæ, for the stubborn fact remains that they do not use too old larvæ if younger are present.

I HAVE A "CLOD" ready to throw at you, Chalon Fowls, if you don't show some good reason for imagining that selling candied honey "will mean lower prices for us all." Did C. F. Muth sell candied honey for less? If you had a monopoly of the liquid trade, would it lower your prices? [That is right, doctor. While you are about it, throw a clod at him for me. I had about used up all my clods, and was just getting ready to retreat.—ED.]

SURELY that was a very exceptional case of Mr. Swift that Bro. Doolittle mentions, where the bees of a swarm entered "half a dozen hives all at once, and nearly all of them were killed." I never knew of such a case before. I've often had a swarm enter a wrong hive, but not several, and the swarm was always kindly received. Of course, this does not refer to starvation swarms in spring, which may be killed.

MY EXPERIENCE does not tally with that of Bro. Doolittle about swarms with clipped queens entering wrong hives (p. 570). My hives stand in pairs, or groups of four, with 2 to 4 inches between hives; and when a returning swarm enters a wrong hive, 49 times out of 50 it is not the adjoining hive, but one 20 or 100 feet distant. I think generally, if not invariably, it is a hive where a swarm has returned a short time before, the noise they make attracting the later swarm.

CHALON FOWLS, it seems true that the larger part of C. F. Muth's honey was sold to manufacturers, but it doesn't clearly appear whether they took it solid or liquid; neither does it clearly appear from Fred's letter how much table honey was sold in the liquid form. I was wrong as to the actual amount of granulated honey sold, for Mr. Muth clearly carried the idea that the bulk of his customers demanded candied honey; but I suppose he meant the direct consumers, and not the grocers. He always argued that consumers could and should be educated to take granulated honey.

THE IDEA that bees build downward faster than sidewise is a good argument in favor of tall sections; but objectors may argue that, with square sections, that is just what is wanted, so that the bees will get ahead with their downward building, and fasten to the bottom while they are filling out to the sides. But bottom starters are the thing to secure that. [I do not quite understand your point. Is it not true that bees show a preference for building a long deep comb rather than a square one? and is it not true that they build on the bottom of the comb with more readiness than they would keep on building to fill out the corners of a square section?—ED.]

A. J. WRIGHT, p. 567, objects that the glue of fences will soften if accidentally left out in the wet. I've been studying the chances for such an accident, and think they would be about as great as for leaving one's watch out in the wet. But Mr. Wright is right in finding they are harder to clean, and some other people will find it out some day. [In all the thousands of fences we have sold, we never before, but once, knew an objection raised to the glue on account of its yielding to the influence of moisture or water.—ED.]

I CONJECTURE that your conjecture, Mr. Editor, p. 474, is a wee way wild (500 acres buckwheat to busy 100 colonies). Quinby estimates that an acre of buckwheat yields 25 lbs. a day. If that be correct, 12 acres would furnish 100 colonies 3 lbs. each; and 20 acres would give each colony 5 lbs. But 1000 acres would not keep 100 colonies busy in some places and in some seasons. [I based my estimate or guess on what I had actually seen on the buckwheat-fields of New York. In one place I think there were 100 colonies that actually had within their range of a mile and a half or two miles 500 acres of buckwheat; and yet within one bee-range there might be in some cases 5000 acres of buckwheat; but I doubt very much whether less than 500 acres would keep busy 100 colonies.—ED.]

PROF. COOK is urging in *American Bee Journal* the establishment of bee-keepers' exchanges, or possibly one grand bee-keepers' exchange, and things are pointing in that direction. On page 554 of GLEANINGS is an item that indicates that something in the line of an exchange is already established at Medina. It reads: "Parties who have not secured honey enough for their home market will do well to write us. Often we can refer you to some one near you who has honey to sell, or make you a shipment direct from some of our customers near you." Isn't the thing needed an organization in the same line to cover the entire country? [It has been our rule for years to help producers find a market, and we stand ready at all times to assist them in any way in our power. We can buy only a small portion of the honey that is offered us, while on the other hand we usually know where a market can be found for the honey.—ED.]

S. P. CULLEY makes a good argument with his "saliva" doctrine, and sets one to thinking (p. 567). It is true that a piece of pine gnawed by bees at the entrance is made yellow, more at some times than others, perhaps depending upon what the bees are working at. Do the bees slobber over what they bite? But the stick is always made yellow, never black. A white section in the middle of a super, if left on long enough, becomes black, never yellow. And if "'licking by the bees" is what darkens, what business have the bees licking sections fully sealed? "The glossy blackness that once white combs gradually acquire," Cheshire says, comes from the "dejectamenta of the bowel" of the larva. Aside from the varnishing with propolis, I suspect that the chief darkening of white sections comes from the bees plastering over the surface bits of dark wax brought up from the brood-combs. [I should like absolute proof that the saliva, or slobber, is really the substance that makes the sections yellow. Is it not possible that yellow pollen clinging to the bottom of their feet might cause the wood to be stained yellow instead of the saliva? See article by J. Steigel, in Pickings, this issue.—ED.]

GLOSSOMETERS of several patterns are in use in France, and I'm not sure but they measure bees' tongues with them without killing the bees. But I'm not going to help you about them, Mr. Editor, for I'm mad because you wouldn't help me when I had the fit on me. Now that the fit's on you, you can hunt up your own glossometers. But stir up Hasty. He worked on the short-tubed-clover question, and, I think, made considerable progress. [Since I have discovered the convenience and ease of measuring bees' tongues in the manner I explained in our last issue, under a strong magnifier, I can not see what any one wants of a glossometer. Of course, such an instrument would demonstrate just how far a bee could reach; but when the insect is dissected, and the tongue laid down on a micrometer rule, for the purpose of comparison this method is exactly as good as the other; that is to say, if all tongues are measured in the same way, then we can determine which of the several tongues measured is the longest. Yes, yes; by all means let us hear from Mr. Hasty. Let us gather all the information we can, and work at this problem from both points.—ED.]

EVIDENTLY, Mr. Editor, you don't get hold of the idea of my plan of dampening sections. You think it wouldn't be much faster to use my plan of putting 100 or 200 in a row. Bless your heart, I don't put any in a row at all. I just take a package as it comes from the factory, and, without taking out a section, wet the whole business at one fell swoop. I've told how, but I'll tell again. Take off one side of the package so as to expose the grooves, and see that the ends of the sections are chucked down solid together so that a drop of water let fall on a groove can run right down through the whole. Understand, as the package lies before you, the edges, not the sides, of the sections, are uppermost. Put a plug in a funnel that closes the opening entirely, except a groove at one side to let through a very small stream. Let the plug project downward, and be whittled down to a point. Take a tea-kettle of water *boiling hot*, pour it into the funnel and direct the stream along the line of grooves, moving just fast enough so that the hot water will run clear through. [Well, now, doctor, if you described your method I do not remember it; but your plan would not work with the tall sections, or sections not exactly square, for the reason that the manufacturers are not always as careful to put sections the same way in the box, and as a consequence one set of grooves might not register with the next set below. Then I should think, doctor, there would be some grooves of some sections that you would miss; and a few broken sections would more than pay for the extra trouble in making a thorough job of it.—ED.]

PICKINGS FROM OUR NEIGHBORS' FIELDS.

The cricket's lonesome chirp,
The quick descending sun,
Speak of the fall's approach—
The harvest labor done.
Fill up the hive, 'gainst Borean blast,
With summer's choicest stores;
Let not a moment go to waste
Ere winter locks our doors.

CANADIAN BEE JOURNAL.

In speaking of the coming convention at Chicago, the editor says:

> The program will no doubt be an excellent one, besides the opportunity of visiting the great city; and we would recommend any of our readers who can take a holiday to themselves on the above dates not to miss going to the convention. Our brethren on the other side have always shown the warmest and kindest feeling toward Canadian visitors, and treated them with the greatest possible courtesy.

That has the right sound, and the good feeling between the people of Canada and the United States of the World should be regarded as a matter of course.

⁂

A gentleman at the Oxford convention said he had some honey that weighed 14 lbs. to the gallon. He thought he was giving too much for the money, so he thinned it down with water. The advice he got at Oxford convinced him he had not better do it again. If 11-lb. honey is worth 10 cts., I would very willingly give 20 for 14-lb. honey of the same kind. Density of extracted honey does not receive enough attention. When it can be kneaded into gum-drops a big boom awaits apiculture.

⁂

Among the other things that seem to anger bees, Mr. Morley Pettit says a toy windmill placed near their apiary last summer so enraged his "pets" that they flew about it and darted at the revolving fans. He says perspiration angers them, and hence sting-proof suits of clothes are objectionable, as they cause so much perspiration. He uses a complete suit of white cotton, with a bee-veil over a broad-rimmed straw hat tucked into the clothing far enough to stand out clear from the face. With a good smoker filled with rotten wood he feels reasonably safe from stings. He says, "Never allow horses to enter the apiary, for the bees will rush at them and sometimes sting them to death, even at night."

THE AUSTRALASIAN BEE-KEEPER.

Concerning the cause and cure of robbing, Mr. H. L. Jones, of Goodna, has this to say:

> With all the virtues attributed to the bee, she, nevertheless, falls from grace in at least one respect, and that is in the utter disregard she displays for the good old maxim, "Honesty is the best policy." Her motto is to get honey honestly if she can, but to *get it*, and this disposition of hers to get it when none is to be obtained by honest quest is frequently the cause of much perplexity and vexation of spirit to the inexperienced. My troubles in this line have been as deep as any, and first obtruded themselves upon me when I found it necessary to extract during times of scarcity of nectar, and was guileless enough to replace the combs in the hives at once after extracting. I know better now how to manage these things, and find that I can extract with impunity at any time, providing that I have a bee-proof honey-house, and return the extracted combs at dusk, so that the bees can have them cleaned up and every thing in apple-pie order before morning.
>
> Carelessness in feeding, or in exposing sweets of any kind, is also often the source of an outbreak of robbing. But very few experiences, in an apiary of any size, with the robbing propensities thoroughly aroused, are required to induce the greatest care in the performance of any future operations that are necessary during a dearth of honey. Of the many remedies that I have tried in bad cases of robbing, carbolic acid has been the most successful. This acid emits an odor so obnoxious to the olfactory organs of the bee that only the legitimate occupants of the hive, with their strong attachment to home, will pass it, while the most persistent marauders are content to sniff it from afar. A weak mixture of the acid and water sprinkled at the entrance is often sufficient; but in very bad cases I find it a big advantage to throw a quantity of grass loosely at the entrance and sprinkle this occasionally with the mixture. Apart from the loss sustained through the plunder and murder of their own species another disagreeable result of the robbing mania is the persistency with which the demoralized bees attack every living object in the vicinity of the apiary, and the unfortunate attendant speedily finds himself a special target for the operations of their stinging apparatus.

Confirming the above the editor says:

> I too can testify to the efficacy of carbolic acid in cases of robbing; and I think that, if once tried, no apiary will be without a bottle of it. . . To use the acid solution conveniently I procure a tight-fitting cork and cut two slots in it lengthwise. This makes a good sprinkler of the bottle; for, by suddenly inverting it, several drops of acid are thrown out, and by a simple swing of the inverted bottle the acid can be directed to any spot. When bees get to making a target of the bee-keeper he should wear a black hat, as they will strike it every time.

DISCOLORATION OF COMB.

The following unique if not interesting article on travel-stain came to my notice in a French bee-journal. I am very sure they credited it to the *Leipziger Bienenzeitung*, a German paper. Being struck with what seemed to me to be some good reasoning I translated it for this department, and give it for what it is worth.

> The illustrious Huber, that passionate friend of bees, was blind. There are blind people to-day—not in body, but in mind, among bee-keepers who pretend to be masters of apiculture. It is true, it is not always easy to see, and I have often had that experience myself. How many things I have witnessed every day, and yet have not been able to understand them until by chance my eyes were opened! Thus it was that for a long time I was unable to explain the color-stains in wax. No bee-keeper, even among the most experienced, has been able to give me the true reason.
>
> We notice the sheets made by a prime swarm during the first days. They are entirely white, while by autumn they will have become yellow or even brown. Evidently, this coloring of the wax is due to an outside cause. The new frames in which there was brood are brown while those that contain honey or which are empty are yellow. We see likewise some white frames, others which have become partly yellow, and others show here and there only a few stains of various tints. From this we may conclude the coloration of wax is not made all at once but partially. That brings to mind the erroneous old doctrine that the yellow color of wax is due to the breath of the bees or to the color of the pollen. Have the bees, then, eaten nothing but yellow or white pollen? To this question every bee-keeper will say no. For me the bees gather pollen of various colors, which should, according to Dr. Planta, gives even a noxious wax, and not simply a white or yellow wax. It is useless to claim that.
>
> Let us take several yellow frames and expose them to the light; then we shall be convinced that the wax is not uniformly yellow, but that some parts are dark-

er than others, some being of a deep orange color. The frames which have become yellow have, then, been the last to take this color, and, consequently, it is not the pollen consumed by the bees that has given this color to the frames. We can make these experiments every time we open a hive. We shall be convinced at the same time that the interior of the hive, the frames especially, in the cracks and angles, will be more or less yellow. The cause of the coloring of the wood is the same as for the stain in the wax. This cause was unknown when, happily, in 1890, I was fortunate enough to find the natural and complete explanation of it.

In summer, at the height of the brood-rearing season we see many bees running around on the ground in front of the hives. These are, for the greater part, old bees, which, being aware of their incapacity, have voluntarily abandoned their hives. There are some old bees and some young ones, some outwardly all right, and the others infirm. Let us take a few and examine them closely. We will take, preferably, those that are gray, quite hairy, having the abdomen separate, and really seeming to be cut in two in the middle. Others will have the abdomen fully rounded out, and between the rings a faint yellow tint. The latter will serve for our experiments. Let us take one of these bees, seizing it by its lower extremity, when there will issue from it quite a long thread of a beautiful yellow color, emitting a mild perfume. This stuff colors the hands, paper, wood, etc., with a fixed oily appearance. Throw this stuff into water and it will be found to give to it only a faint yellowish cast, and it will spread out into sinuosities, while in good alcohol it readily dissolves. If we warm a certain quantity of this substance, and press it between two sheets of paper, it will leave a greasy spot.

This yellow matter contains, then, considerable wax. But if we take for our experiments an old bee, the liquid obtained will be dark brown and of a sickening odor. This is the ordinary secretion of old bees, while the odoriferous yellow liquid is the first evacuation of the young bees. The yellow color of these excreta is identical to that of the wood of the hives. The drones do not have this matter to any appreciable extent—at least I have never been able to find any of it on them. During swarming, the bees already excrete these substances, traces of which we find on the leaves of trees and on our clothes. In this case they always retain the wax, which serves them for making their first combs. Hence it comes that swarms build white comb. The young workers of old colonies deposit their yellow color either on the empty frames, which, in consequence, become gradually yellow, or on the walls of their hives; and for this purpose they seek with special eagerness the cracks and points. At times they use simultaneously this matter with the wax, and then they build yellow.

As the bees seek to throw aside these excrementitious matters, must we not therefore conclude that the latter, while not exactly noxious, are entirely useless in the economy of the hive? What effects do these substances have on the human body? I do not know; but I am led to believe, from some indications, that their action on it is not favorable. What, then, may be the chemical composition of this yellow color in wax? The English professor, Hofstison, says that butterflies, on leaving their cocoon, leave behind a few drops of uric acid after they have colored their wings yellow. From this I should be inclined to believe that the yellow color of wax, which at first is the same as that of yellow butterflies, is due to uric acid. That is my opinion. I believe it to be correct, and shall maintain it, even though it may seem repugnant to others. J. Steigel.

* * *

BRITISH BEE JOURNAL.

A missionary from China reports the extraordinary death of five persons from eating honey. Those who only tasted the honey, which had an unusual appearance, sickened, suffering great pains in the stomach. Others who had eaten more died within two or three days.

* * *

Bees crossed once with the Caucasian species are said to work the red clover to great advantage, and distinguish themselves from others in this way.

GENERAL CORRESPONDENCE

CLIPPING QUEENS A LA JONES.

Introducing a Queen on a Caged Comb; an Experience with Bee-paralysis.

BY A. NORTON.

Dr. C. C. Miller:—Please answer this medley of things in Gleanings. I should like your ideas and those of friend Root on such as he thinks worth noticing. This is merely a little gathering-up of little experiences at different times. Speaking of the method of clipping recommended by the Australian correspondent in Gleanings last year, I tried the same on two queens. The first one, as soon as I had her legs between my thumb and finger, as per directions, began to twist herself around so vigorously that I began to fear for her safety; for she performed great feats of suppleness, and was bidding fair to twist her legs off, and I was afraid I had crippled her. I had to take her up again and place her more carefully so that she could not twist, her feet being held between more than the two fingers. I took up another queen to clip by this same method. As soon as I had picked her up by the wings, she curled up into a ball as if she had been stung. While I had been careful, I feared I had killed her. I put her on the palm of my hand and stirred her around considerably, but she did nothing but quiver as if in the last pangs of death. Finally I placed her back on the comb unclipped. She soon picked herself up and went about her business. A few days later I clipped her in my usual way, which is simply to place the scissors under her wings while walking on the combs, give a little clip with a steady, careful hand, and leave her unconscious, almost, of what has happened. I find no difficulty or danger in this method. Did you ever try it? Do your queens ever "play 'possum"?

Last season I placed a valuable queen in a colony but recently made queenless, caging her on the comb in a cage pressed into the comb. I had to take a tender new comb, which also was too thick, and projected too far. Next day on looking in I found that the cage had been dragged out of place by the adjacent frame—whether in putting in the previous day or in taking out this time I did not know. The comb was mashed, and the queen was not to be found. I searched thoroughly for her at sundry times for some two or three days, and then sent for another queen. A queen that I tried to introduce several days later was not accepted, and then I thought to look among some loose scraps of comb between the follower and the side of the hive. There I found the queen with one leg crippled, laying in the loose comb, a small guard of bees with her. She had been accepted after some apparent struggle following her sudden release after so short a confinement; had re-treated to the side apartment at the outset, and there taken her abode with but a few of the bees. But she was welcomed in the main building when put there. Is it not strange how soon queens may be accepted, even when disturbed at times when we would expect them to be killed?

Anent your answer to "British Columbia," on p. 151 of *American Bee Journal*, I have tried similar methods, but have found them too cumbersome. Once I caged a queen that way with her attendant bees and hatching brood in a colony just queenless. I put wire cloth over a closed-end frame, making it bee proof; hence it was practically the same way that B. C. describes. The next day I found that the queen, like a little simpleton, had been too sociable and confiding with the outside bees. She had got on to the wire cloth facing them, and they had dragged her legs through between the meshes, and had held her in the grip of deathly determination till she was so exhausted and devoid of vitality that I had to kill her. Would not such an experience have caused some modification of your answer to B. C., or would you consider it only an exceptional case?

I had an experience with bee-paralysis last summer. The previous year a colony had it badly, and it lasted through the winter and spring, but disappeared in time for sage harvest in May, so they made some surplus. It did not reappear with those bees, but elsewhere. Colony No. 1, as I will call it, came down with paralysis in July with a young queen of their own rearing. The disease made much headway. Colony No. 2 began to show slight signs of it considerably later. They were not near each other. I destroyed the queen of No. 1 and gave them one I had got by mail. She never laid an egg, having probably been injured in the mails. After a time, No. 2 becoming steadily worse, I transferred queen from No. 2 to No. 1, to give a queen to No. 2 when she should arrive. But No. 1 continued to get worse. After some weeks I tried the experiment of putting chloride of lime in No. 1. It did no good, but two days later I found the queen dead in front of the hive, whether from paralysis or chloride of lime I did not know. When a new queen from elsewhere had been given No. 2, and her bees were beginning to hatch, the disease among the old ones had become so disastrous that I felt something must be done. I put an empty hive down on the stand, removing the old hive so that only such bees as could fly should get back to the stand. I took the hive with the weak bees thus separated, and fumigated it with sulphur. I then carefully hand-picked all that showed any signs of disease in the colony that had got back to the old stand, and put the remaining well ones back into the original hive. For a while I thought I had found the royal way to cure the trouble, but before long it was as bad as ever. Then, as I could not afford to risk the queen I had therein, I took all the combs out and again sulphur-smoked them, and gave them with the queen to a made-up colony of healthy bees. I found that the smoking didn't hurt the young bees in the capped cells a particle. I also united the diseased bees of No. 2 and No. 1 in hive No. 1, and gave them a hybrid queen I didn't care about, just to experiment. The new colony in hive No. 2 never showed a trace of disease. The united ones continued to tremble and die off till the young bees had populated the hive. At this time they have been long free from any trace of trouble. Does this indicate that queens free from disease will clear a hive of trouble? Does it also indicate that a queen is not necessarily the one that perpetuates the trouble, since it disappeared from a hive with the old queen and appeared in two hives with young ones of their own rearing? Do you think it was necessary to have fumigated hive No. 2 before giving it and the queen to a made-up colony of healthy bees?

Monterey, Cal., Mar. 14.

[Dr. Miller replies:]

My first experience with the Jones plan of clipping was much like yours. I feared the queen would twist off a leg. You used more fingers, and succeeded; I used no more fingers, but more legs. I clipped a number in that way, and had no trouble so long as I held two legs between the thumb and finger.

Yes, I've tried clipping a wing while the queen was on the comb, but it was never a

USING THE COGGSHALL BEE-BRUSH.
See Editorials.

great success. The queen wouldn't hold still, and it didn't seem possible to control the amount of wing removed as when the queen was firmly held.

No, I never had a case of playing 'possum such as I have read about; and yet I have had what might be the same. In several cases a queen has caught a foot in her abdominal extremity, and seemed motionless while it was caught, but it never lasted any considerable time, and I'm not sure but I always pulled the foot loose.

A single instance such as you relate about the queen caged on a whole comb would not materially change my answer to "British Columbia." The plan of caging a queen on 4 square inches or more of comb has been successfully tried by numbers in a great many cases. It might happen in any such case that the bees would fasten upon a queen's legs and injure her, but such cases have not been reported as common, so that it need not be considered as a thing likely to occur in the plan so thoroughly tried. The only question is, would the bees treat a queen less kindly if caged on a whole comb? It *seems* to me that, the more room she has, the less danger of rough treatment. Still, there may be something about it that I don't understand, making the larger room more dangerous. Possibly I may have a chance to try it.

As to your questions about paralysis, I can give nothing more than a guess except to the one question about the queen perpetuating the disease. It seems pretty clearly shown that the queen does not *always* stand responsible for the disease, although I believe there is a general conviction that the removal of the queen is a step toward the removal of the disease. Whether a fresh queen will clear out the disease may be an unsettled question. I don't know how much good that fumigation did, but it may be worth further trial. It is an interesting item, that sulphuring did not destroy sealed brood. It is in line with the fact that full-grown wax-worms in brood-combs are not affected by very severe fumigation.

C. C. MILLER.

[Although Dr. Miller has covered the ground pretty thoroughly, as I am asked to give my comments I do so with pleasure. I have tried clipping queens by all the various methods recommended, including that described for holding the queen by the legs. I have succeeded in doing it by this plan, but have always been fearful that by a sudden nervous twitch I might let go, or might release one leg or two, so that the queen in her efforts to free herself would twist off those remaining. Taking it all in all, I greatly prefer this plan: As soon as I see the queen I grasp her by the wings with the right hand. While holding her securely I then grasp her between the thumb and fore finger of the left hand, by the shoulders. The thorax of a bee has a chitinous hardened covering, and there is no danger in handling the queen in that manner. While she is between the thumb and fore finger of the left hand I then, with a pair of scissors, clip her. It is true she may throw up a stray leg, and a bungler might catch that leg with the scissors; but by passing the point carefully over the wings, and awaiting a favorable opportunity, the blades are brought together.

We have had queens get the cramps many and many a time, especially in caging for mailing. We put her in the cage, even though apparently nearly dead, and put in the attendants. Very shortly the "dead" queen will have come to life again, and be as lively as ever.

As to bee-paralysis, there has been proof advanced to show that the disease is constitutional, and resides in the queen. There has also been proof to show that even when the queen is removed the disease would go on just the same. The only rational way of treating bee-paralysis is to take all the colonies so affected and remove them to a new location a mile and a half from any other bees, and then remove the queen and give them another. But before doing so, shake all the bees in front of the entrance, in the grass. The sick ones will remain outside while the healthy ones will crawl in. After the queen is introduced, go over the combs ever so often, and hand-pick the sleek shiny bees off the combs. Once in a while give the colony a frame of hatching brood from a healthy colony. We have found this, that removing the queen and also removing the sick bees as fast as they show symptoms of the disease, at the same time giving hatching brood, will very often cure the worst cases. One writer recommends putting a healthy colony on the stand of the weak one, and the weak one on the stand of the healthy one. The result is that the healthy bees carry out the dead ones and the sick ones, and, according to the statement of the one who recommends this treatment, it effects a cure.—ED.]

BEE-LITERATURE.

An Experience in Canvassing; the Somerford Method of Forming Nuclei; Belgian Hares; other Side Issues in Connection with Bee-keeping.

BY W. A. H. GILSTRAP.

Some time ago I had some business to attend to in a locality where several bee-keepers reside, and concluded to try to supply them with some good literature. Armed with the latest A B C, and sample copies of GLEANINGS, I started out. Bee-keeper No. 1 will not buy reading-matter, so I could not do any thing with him.

No. 2 has no use (?) for bee-books and papers, for he has known a long time that those who farm in books can't farm in the ground. He accuses me of believing all I read, and he is determined not to be caught that way. He is a good neighbor, reads the *San Francisco Examiner*, and is happy.

No. 3 had lately bought a bee book. I asked him the name of it, and he said it was Root's A B C of Bee Culture. When asked if he did not want a good paper published by the same firm he said he thought not, as his time was so much taken up that he could read but little about bees. He examined GLEANINGS, and said it was a good paper, but asked me if the book was not worth more to him (a beginner). I told him that the paper would be worth more to me; but to one just commencing the business the book is worth more, as the information is more condensed, and it is easier to locate just what is wanted, and he could rest assured that he had the latest and best; but if he had time to read, it would certainly pay to have both. He concluded to read up in the book awhile, and then take GLEANINGS.

No. 4 cared little for the A B C book, but was captivated with GLEANINGS. Not having the dollar, he would not permit me to send in his subscription, but said he would subscribe when I went to transfer his bees (90 colonies). He has had bees probably eight or ten years, without any literature on the subject.

No. 5 has Newman's "Bees and Honey," and promised to take the A B C book later in the season, and very likely will do so.

No. 6 has a few cows and some chickens besides his bees. He is making money, and is too busy to read. My suggestion that he might accomplish much more if he would take some time to read did not shake his mossy-back. The trouble is that he has very great faith in a neighbor, and gets his information from that source; he, in turn, gets his information mainly from his father, who reads, and that makes my friend's bee-lore pretty well strained.

But to give up without a single subscriber was too bad, so I concluded to make a final effort.

"You spoke," said I, "of dividing your bees. Here is a plan in this book which will probably be worth several times the price of the book to you this season." Then I read the Somerford method of increase to him. He was delighted. Then I told him how a friend varied the method, also my variation. Of course, when he heard me tell it he liked my plan better, and had me repeat it. Then my best efforts were used to convince him that all bee-keepers should read books which contained so much practical information. How many books did he buy? Nary a one.

Of course, apiarists are an intelligent lot of people. A footnote is almost in sight which tells what an immense amount of reading-matter has been sent from Medina, to say nothing of other publications. Please tell us how many never read, and only think occasionally. How long could a bank or railroad keep in business by such methods? When I go out canvassing for bee books or papers again it will be after my work at home is well caught up and the desire to be a philanthropist is quite strong.

But the writer never undertook any thing more popular than a Brosius pure-food-bill petition to our Congressman. Some would ask what the bill had to do with whisky. I replied that, when the Supreme Court of the United States decides that whisky is a food, it will certainly be governed by this law, if passed. Of course, a Californian could not resist such argument, and nearly all signed. Two men without any business refused, also a farmer who smoked cigars, but can't afford catfish at eight cents a pound. You see, one whole man is generally made out of the same kind of stuff. The following letter explains itself, and also would indicate that those who say "petitions do no good" are mistaken:

W. A. H. Gilstrap:—I am in receipt of your petition relative to the Brosius Pure-food Bill. In reply I desire to thank you for calling this matter to my attention, and to state that it will have my careful attention and consideration. Trusting that if I can be of any service to you in any way you will not hesitate to command me. If you want any thing, ask for it. I am Yours very truly, J. C. NEEDHAM.

THE SOMERFORD METHOD.

This splendid plan of increase is all right if you have a sufficient number of *best* queens. I am never so fortunate. It has been desirable for me to modify the plan in order to make rapid increase and properly improve stock. But it takes more time than to follow Mr. Somerford's method entirely.

The modification which suits me best is, first, to get queen-cells by the Alley, Doolittle, Hyde, or other good plans, from your *best* queen. Destroy as many of your *worst* queens as is necessary. When the brood is sealed, destroy all queen-cells of this inferior stock, and the following day form nuclei, using the cells from your choice stock, confining as Mr. Somerford directs. My best success has been where I stopped the hive-entrance with strips of old grain-sacks, but it is always convenient for me to liberate the bees if they fail to do so.

When the Somerford plan first came out in GLEANINGS I decided it was worth more to me than any article I ever saw in any bee-paper. Valuable trial has confirmed this view. So far as the record is public I had rather be a Somerford than a Dewey.

BELGIAN HARES.

What you say in your June 1st issue about this growing industry is quite interesting. Do not expect as rapid increase as page 431 would indicate. A limited experience with over thirty pure and graded Belgians convinced me that, where feed is rather cheap, they can be raised to an age of five months for a feed cost of 25 or 30 cents each. The feed was weighed. Of course, there is other cost. If they can get gilt-edged treatment they might pay well nearly any place; but some places are better adapted to making a large business of it than other localities would be. Perhaps they will eat any vegetable food that a cow or chicken will, if it is in good condition, and some milk is quite beneficial. It is a good business; but your last advice (p. 446) is good—"Go very cautiously."

The Belgian-hare industry combines well with bee-keeping. Why not have a rabbit corner in GLEANINGS? Chicken culture also combines well with bees. Why not start a chicken department also? Where climatic and other conditions favor, olive-raising dovetails much better with bees than either. Of course, it would not do to leave them out. Then would GLEANINGS be a bee-paper or a general agricultural paper with a bee department?

Bee-keeping seems to work better in this country as a specialty, but not as an entirety—a sole occupation.

Grayson, Cal., June 21.

EVOLUTION OF THE HIVE QUESTION.

Arguments in Favor of Shallow Brood-chambers.

BY T. K. MASSIE.

In this fast day and age of the world — in this day of sharp competition—when we utilize the elements of nature and do a great amount of our work by steam and electricity, it becomes us to minimize the costs of all the items entering into our pursuits of life; and in bee-keeping, as in most other pursuits, the element of labor is the principal item of cost. With this idea in view the various inventors of hives have gone on from the box hive or straw skep to the present high state of perfection.

When I commenced keeping bees I bought two hives of a friend and bee-keeper of several years' experience in the business—his own invention. They were on the "long-idea" style, divided into three apartments of 10×12 ×12 deep. The middle apartment was intended for the brood, and the one at each end for a surplus storage. It is unnecessary for me to tell bee-keepers that the bees refused to "spread out laterally" and take possession of the end apartments, and fill with surplus. I very soon discarded them.

EXTRACTOR ANCHORED FOR WORK.
See Editorials.

My next trial was the Simplicity hive with hanging frames with metal ends resting on tin rabbets. I found this hive a great improvement on my first hive, but not satisfactory. I tried the Dovetailed, Heddon, Conser, Johnson, and other hives, but was not yet satisfied. I then bought the Nonpareil (Dr. Tinker's) hive, which also had hanging frames. About this time the reversing fad was at its height, and I thought I saw great things to be accomplished with reversible frames. It looked all right, theoretically at least. I changed all my frames to closed reversible frames (I am still pleased with this change), supported by a wire from center of end-bars.

I began a close study of the hive and frame questions, having six cubical hives of my own invention made. But I soon discovered that the capped brood always lies *directly* on its back, head elevated just the pitch of the cells in the combs (can you, Mr. Editor, tell us what *degree* of elevation this pitch is?), and in reversing frames containing capped brood we threw the whole economy of the hive out of harmony by turning the brood with its back upward, head lowered just the pitch of the combs. I have never been able to determine the damage such changing of the natural order of the hive does to the colony of bees (can any one tell us?), but it is considerable. Reversing empty combs turns the pitch downward, and bees can scarcely store thin nectar in such combs. Then the only point left to be accomplished by reversing was to get the combs built solid to the bottom-bars.

But there is a better way to accomplish this. By using a thin and narrow bottom-bar, ¼×¾, and having our combs built above a set of combs in a good honey-flow, the bees build the comb solid to bottom-bars without any reversing. This is one reason why I use two brood-chambers of shallow frames to the hive. I would class any frame over 8½ inches deep as a deep frame. By further investigation and study I found that bees winter better, and build up faster in the spring, in a box hive than in a frame hive, and this because they have deep combs and a hive ceiled up air-tight with propolis. Then we want a deep comb on which to winter our bees, and a shallow comb — a hive capable of being contracted to a shallow comb without the use of dummies or other loose parts, which requires extra care and labor to take care of and keep in place—over which to produce our surplus. The use of two brood-chambers with shallow frames is the only way I know by which the problem can be solved. A chaff or double-wall hive for outdoor wintering is necessary. It saves honey, and is better every way for the bees. They eat less in confinement, and hence are less likely to have diarrhea, but the chaff hive is too costly and cumbersome to handle.

The next improvement is along the line of a double-wall hive. The closed-end frame accomplishes part of this object. Besides, it is more pleasant to handle the closed-end frames. One can handle them by twos, threes, and fours, thus rendering the manipulation very rapid.

Tophet, W. Va.

[Closed-end frames are not nearly so bad to handle as one would imagine who has never tried them. As to reversing injuring brood, I don't take much stock in the idea. We have reversed hundreds of frames, and never could see that it did any harm.—Ed.]

SHALL WE WORK FOR LONG-TONGUED BEES OR SHORT-TUBED RED CLOVER?

What has been Done in Changing the Varieties of the Rose-Plant.

BY DR. C. C. MILLER.

There is no good reason why work should not be pushed with vigor in both directions. Suppose it should take ten years to secure the necessary increase in the length of tongue to work on ordinary red clover. It is probable that half that increase of length could be secured in much less than half the time necessary to secure the full length, for it is the extreme that costs effort. Probably in the first year could be gained as much as in the succeeding nine years, or, in other words, if the desired length could be obtained in ten years, half that length could be obtained in one year. Suppose, also, that ten years should be necessary to secure red-clover tubes sufficiently shortened for ordinary bees to work on, we might expect to secure half that shortening in one year. Now, instead of spending ten years upon one to the neglect of the other, put in the one year on both, and bring together your bees with tongues half lengthened, and your clover with tubes half shortened, and —*there you are.*

Of course, nothing is certain in any of these estimates. It might take twice ten years, or it might take only half of ten years to reach the desired result by working in only one direction. It might take more than one-tenth the time to reach the half-way point in either direction, or it might take less. The only point I am urging is that, of we modify both tongues and tubes, we *must* reach the point of getting red-clover honey in half the time we could get it by working alone at either tongues or tubes; and I suspect that one-tenth of the time comes nearer the truth than one-half. So, Mr Editor, don't let up in your enthusiasm for long tongues, and get switched off on the track of short tubes, but run the two parallel.

Another point I want to urge with equal emphasis—yes, with even *greater* emphasis. It is that this is to be the work of *all* rather than of a few. I do not undervalue the work of our scientists and our experiment stations. Blessings on them for what they have done and are doing. But this is a work in which the multitude can join. You have struck the right chord, Mr. Editor, in saying, "In the meantime I hope our bee-keepers will be on the watch for red-clover heads with short tubes." As to both tongues and tubes, it is a matter rather more of finding than of making. The father of a lost child may die of old age before finding it if the search is left to him alone; but if all the world joins in the search he will soon have the child in his arms. In the matter of establishing a strain of short-tubed clover, the very first move is to find a plant with tubes at least a little shorter than those of its neighbors. Manifestly, two men on the watch will be more likely to succeed in finding this than one alone. A thousand giving a little attention to the matter will be better than one man spending his whole time in the search. Remember that variations in plants are things of freak. Florists secure new varieties of flowers by looking out for these freaks. A rose-plant, for example, will throw out a branch having roses different from the rest of the bush in some way, and this is called a sport. Or, the flowers may be the same, with a difference in growth of stock. Catherine Mermet is a popular pink tea-rose. One day a branch on a bush of that kind was noticed to bear roses that were pure white. Slips were taken from it and propagated, and now we find in all the catalogs "The Bride," the beautiful sport from Catherine Mermet. Agrippina is a Bengal rose bearing crimson roses in great abundance, the plant growing of usual height. In 1858 Rev. James Sprunt found a branch of Agrippina shooting away above its fellows. Slips from this branch were taken, and now we have the climbing rose, James Sprunt.

So it is just among the possibilities — nay, even among the probabilities—that somewhere is growing to-day a sport among red-clover plants that is just what we want, and some one may find it where least expected. The point is that this thing must not be left to the scientists, but all of us common bee-keepers must have our eyes open, and no telling who will be the lucky finder. Probably, however, it will be by cultivation and selection that the goal will be reached; yet the first step must be the finding of something at least a little out of the common. You and I can find it just as well as the experiment station—yes, more readily—for there are more eyes belonging to us, and we can plant and pick out the best. I do not mean that our experiment-station men are not better adapted to the work than are we common bee-keepers. Perhaps one of them may do more than any hundred of us. They are trained for the work. But there are thousands of us; and as this is largely a matter of finding, numbers count.

What applies to clover applies also to bees. Differences in length of tongue exist now, and it will be easier to find the longest tongue if many engage in the search. If I understand the matter correctly, glossometers are constructed that are not expensive, and it requires no special skill to operate them. One can be inclosed over a colony so that no other bees can reach it, and the depth to which the liquid in the glossometer be noted. In this way all the colonies in an apiary can be noted, and those with longest tongues used as breeders. If the longest tongues are chosen each year, please tell me why constant progress will not be made by *any one.* Please bear in mind that differences in length now exist, and that variations are of constant occurrence. All we are to do is to take advantage of the differences and the variations. When some one has made a successful find, let him divide up with the rest, getting a substantial return for his dividend. Mr. Editor, please announce the price of glossometers, and let us all go at the work. At the same time let us all be on the lookout for short-tubed clover.

For our encouragement we have the fact that there have been red-clover queens and red-clover bees. In general, a little is done by bees everywhere on red clover. A little effort ought to bring a little increase in the amount of red-clover honey secured, and united effort ought to bring entire success. It would be a shame to American enterprise if, within a short time, bee-keepers of this country do not succeed in bringing together tongues and tubes so that tons of honey now wasted may be taken. Shall we all help?

Marengo, Ill., July 21.

[Bee-keepers are apt to go by fads; and when the fad is on, they push it for all there is in it; but, unfortunately, before any practical results have been accomplished they too often sicken and tire of it (the new toy) just when new possibilities are almost within grasp. I do not know but this peculiarity, if we may style it such, is true of all human nature. But, as you say, it was E. E. Hasty who started this same idea in regard to short-tubed clovers, and at the time considerable enthusiasm was manifested; but the enthusiasm died out before any thing practical was accomplished. For years, at different times, there has been a demand for long-tongued bees and bees all yellow. But the effort has all been expended on the last-named, and, pray tell, what have we got—beauty, with little else. If the same effort had been spent on long tongues, bee-keepers would now be getting tons of honey from red clover. Just read what Uncle Lisha says on this point in this issue.

If any thing is to be accomplished in the way of getting tongues long enough to reach into the red clover we must *stick to this fad until we get something.* It will not do for us to assume that the "other fellow" will do it, and that we can buy the seed of short-tubed clover and the bees with long tongues. If, as you say, thousands will give a little attention to the matter, it will do more than one man spending all his time in the search.

Now about glossometers. I do not like to throw cold water on them, but somehow even now I can not take much stock in them. They are complicated and expensive. A far better way is to chloroform and decapitate the bees, spread their tongues on a micrometer scale measuring hundredths, and then count the hundredths off through a good magnifier. For *purposes of comparison*, this simple device will beat the best glossometer ever invented. The little micrometer scales can be bought for 30 or 40 cents at any of the large hardware stores. If they can't be bought, we can furnish them at the latter figure by mail, postpaid, I think.—ED.]

CAUSE OF GREASY CAPPINGS.

Some Good Evidence Showing that the Queen is Responsible; a New Kink in Queen-rearing.

BY C. RUSSELL.

I supposed it was generally understood that the queen (or, rather, her bees) was at fault in capping the honey close to give it the greasy appearance. But of late I have noticed a number of prominent writers attribute these greasy cappings to hot weather, a poor honey-flow, etc. I am aware that a colony which caps its honey close will make a poorer job when the honey-flow is light. Location may also have something to do in the case. But I think the main fault is in the strain. To make all plain, let me give a little experience of my own in this connection.

I have been in the bee business (not very extensively) for about twenty years. During that time I have bought perhaps thirty or forty queens, nearly all select breeders; and for twelve or fifteen years I have been very much

UNCAPPING WITH THE DADANT UNCAPPING-CAN. SEE EDITORIALS.

interested in getting and breeding the very finest stock — not the finest to look at, however, but the finest working stock—those that would give me the most honey; and as I produce nearly all comb, they *must* cap it white. I have had not only colonies but strains that I have never known to cap honey greasy. I will call it "close;" for all the difference I can see, one has an air-space under the capping, and the other has not.

In 1893 I bought a select breeder of a man by the name of Wallace—I presume the same man Mr. McIntyre bought his queen of as mentioned on p 12 of GLEANINGS. The first season I reared only four queens from the Wallace queen, as my old strain was good, and for three or four years I did not find their equal.

The next season the four colonies gave about 600 lbs. of comb honey; the best one 180 lbs., all capped very white, while the average for the whole yard was a little less than 100 lbs. per colony. Then I requeened nearly the whole yard from the old queen, and I never saw a greasy section from one of them. Then the next good year we had I took 6000 lbs. from 49 colonies of the above strain. I never knew what the colony with the old queen would do, as she was kept on five or six frames the three years I owned her. The way to test a queen is to rear a few young ones and see what they will do.

Three or four years later I bought another select breeder of the same man. I requested him to select me one whose workers were gentle and yellow, that showed just three good bands, and closed my letter by saying I would not take the best five-banded queen in the world as a gift. In due time I saw a few of her workers were five-banded. But I reared fifteen or twenty queens from her for my own use. The next season nearly every one of those colonies capped its honey "greasy," or close, while all from the first or Wallace queen (thirty colonies, perhaps) capped their honey white. Here were the two strains from the same man. It is needless to say I killed the last queen and all of her daughters.

Next I received a very fine breeder from Minnesota—imported strain. They were good honey-gatherers, but it was in the strain to cap their honey "close," so I killed all the queens of that strain and replaced last season with thirty or forty granddaughters of the first Wallace queen. Besides these and two or three other strains I am testing, I have eight or ten of the "Hutchinson," and if they equal some of the others I have I shall be more than satisfied.

HOW TO REAR GOOD QUEENS.

Most of my queens are reared in the Doolittle cups as described in his book; but the frame of cups is placed in the center of the brood-nest, as I think I get a finer lot of cells built this way than over the queen excluder. Unless the colony is preparing to swarm, or supersede its queen, the queens must be caged. When sections are on the hive I remove one and replace with an empty section with a hole through the top to drop the West cage with queen in. Cut off the projecting wire of cage close to the coil, then use a long tin cover to keep from dropping through the hole in the section. For all those who do only a small business at queen-rearing and sometimes lack the royal jelly to start cells, one of the best ways is to prepare your frame of cell-cups, and into each cell put quite a large larva from any hive without food. This could be put in an extracting-hive, over the excluder, or in a strong queenless nucleus for 48 hours. Then remove larvæ from cells started, and replace with very small larvæ from your select queen. This will secure an extra amount of food in the cells, and they then will not remove the food they put in the cells as they do when we try to help them. By putting in some ourselves, some of the best queens I have ever owned have been reared, not excepting those from natural swarming. When we save the swarming-cells we are apt to save from too many colonies, and they are not likely to be all the equal of one we could select.

Another good method is to change the larvæ in the cells when we find a colony superseding its queen. These can be taken out soon after being capped, and they will immediately start others. The strength of the colony should be kept up by putting in frames of hatching brood. I have kept colonies rearing queens nearly the whole season in this way; but as a rule they have only a few cells at once.

Do you think this too much trouble to rear them? No: our surplus depends largely on the quality of our queens; and the little time it takes to rear them should be a secondary consideration.

Conesville, N. Y.

[Your idea of putting *large* larvæ in queen-cups and then replacing with younger is, I believe, new. I call the attention of other breeders to the kink. Perhaps there is something in it.—ED.]

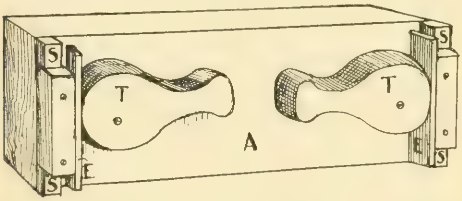
FORM FOR NAILING FRAMES.

The Importance of Accuracy in Hive Stuff.

BY F. GREINER.

Exactness in the different working parts of the bee-hive has become of even more importance of late years than formerly. As the construction of the hives has become more and more complicated, so we have to exercise more and more care in making them. With the old ten-frame Langstroth hive of 30 years ago, and its swinging frames, a slight difference in the length or width or height did not amount to very much, and gave no trouble. The end-bars of the frame might have varied ⅛ inch in thickness, and still no inconvenience would have been experienced. The supers—well, what of the supers? They were six pound boxes; and if they would only take the 5×6 glass they were all right, no matter how much they might vary otherwise. We calculated that ⅜ inch, more or less, constituted the bee space. Now we have gotten that down to about ¼ inch and less. Generally speaking the hive has arrived at a point where the difference of a part of ⅛ inch might make endless trouble to the apiarist. It is now absolutely necessary that the lumber intended for hives be dressed very accurately. We who have been getting out our own hives, and are depending on the general run of the planing-mills for dressing our lumber, hardly know now what to do. We shall have to halve the corners of our hives in order to insure exactness of the inside dimensions, or perhaps give up making our hives altogether. The endwise-staple-spaced frame does not work well unless all hives in use are just right. Especially from end to end there must not be the slightest variation. And then in the brood-frames we shall have to have all infallible uniformity. In fact, there is scarcely any thing about the hive of to-day where carelessness in the making of it may be tolerated.

In getting out frame stuff year after year I find it is not an easy matter to have it just right every time (I speak here of the thickness only). However, if the frames are made up over a properly constructed form they will be all right. How to make and use such is the object of this article. My illustration below shows the form which I use for nailing my half-depth end-staple-spaced frames with ⅜-inch top-bars.



The end bars E E are already placed in position, the eccentric tighteners T T pressing them against the blocks B B, which are screwed and glued to the board or back A. This board or plank is gotten out as true as possible, all the wind taken out, and of proper width, which is equal to the length of the end-bar plus the thickness of the projecting part of the top-bar.

We are now ready to bring the top-bar to its place, the little blocks S S insuring the proper projections beyond the end-bars. On account of cheapness and effectiveness I prefer an all-nailed frame to one tenoned; and nailing through a ⅜ top-bar into a ⅜ end-bar a 1¼ wire nail (17 wire), particularly if cement-coated, answers the purpose perfectly. Four such nails secure the top-bar to the end-bars. We now turn the machine over so the top-bar is down; lay on the bottom-bar, and nail this with four one-inch nails. The frame may now be removed from the form after the tension of the tighteners is released by moving handles up or down as their position may require.

The machine need not be brought back to its original position to be ready for the next frame, but it works either side up, as is evident from its construction. All the difference is, in one case the handles of the tighteners have to be moved up to hold the end-bars securely; in the other case they have to be moved down.

Without going to the trouble of looking over old volumes of GLEANINGS I will say that, some 16 or 18 years ago, I gave a description and illustration of a similar form for nailing wide frames, a machine I still have in use. It differs from this one in so far as it has the tighteners outside of the frame instead of inside. In other words, one solid block, corresponding with the inside dimensions of the wide frame, is securely fastened to the back-board A, and the tighteners placed in such a manner as to enable one to hold the end-bars tight against this block while nailing on top and bottom bars. A machine constructed on this plan insures exact inside dimensions, which is the essential part in the construction of the wide frame and section-holder. With the endwise-staple-spaced frame the outside dimension is the most essential part.

I hope the above may be of some use to the bee-keeping fraternity.

Naples, N. Y.

THE HANDLING OF BEES.

Plain and Simple Directions for Beginners.

BY R. F. HOLTERMANN.

Formerly Editor of the Canadian Bee Journal.

In passing through the country, and coming in contact with bee-keepers, it will be found that very many are lamentably ignorant of the first operation of the bee-keeper. I refer to the proper way of handling bees. Many bee-keepers have their bees in a constant state of irritation, and, be it man or beast that comes in their vicinity, those bees are ready to attack. I know bee-keepers who, in handling bees, crush and injure them at every operation, and the bees are constantly on the defensive. Then the methods adopted are contrary to what they should be. A lady not long ago said to me, "What do you put on your hands when handling bees?"

"I put on wool mits, and the bees sting them very much." The same lady said, "I don't believe in brushing bees, as it kills them so much, and then they are all over the ground in every direction."

HOW TO PREVENT BEING STUNG.

The first step in the direction of preventing stinging is to get properly constructed hives. Bee-spaces in the hive should be properly constructed. Too little will result in crushing bees, as the parts of supers, frames, or sections are put in place. Take, for instance, a case where there is not sufficient room for a bee between the bottom-bar of the frame and the bottom-board. When the frame is put in place bees are crushed; or if there is not sufficient room between the super fixtures and the top-bar of the lower story, or in any other part of the hive. The foundation, then, of success is a well-constructed hive.

THE SMOKER.

Next comes a good smoker. I like a smoker large enough and with force enough to carry me through an emergency. Should the bees be quiet, very little smoke will answer; but should a united attack be contemplated I want a smoker that will throw a dense smoke in a moment. A large smoker, and a good one, can be made to throw but little smoke when occasion offers; but a small ill-constructed smoker can not be made to throw rapidly dense volumes of smoke at a moment's notice. With many the extra price will not weigh very heavily when once they see the advantage of the better article. I do not believe in fuel which is so terribly pungent, a whiff of smoke being very distressing to the operator. I do not know, but I am inclined to think it angers the bees. Let the smoker fuel be dry. It is needless for me to say much upon this subject.

WHEN TO HANDLE.

Many fail to handle bees when they should be handled. It is a rare occurrence that bees require to be handled at unseasonable times. They should be flying freely, or the weather warm enough to permit them to do so. Disturbed during cold and perhaps damp weather, the bees are more likely to be irritable. If the operations can be postponed until the bees are gathering honey or pollen, so much the better; and if you want the greatest amount of profit from the bees, do not disturb them unnecessarily. One can get endless entertainment by sitting by the hive and watching bees going in and out, coming in loaded with the fruit of their labor, soon to hurry out again, and all in obedience to the divine law—no rebellion there; and then we can examine ourselves and see to what extent we are util zing our own lives to carry out the purposes of God.

HOW CLOTHED.

Having now a good hive, a good smoker, and having chosen the proper time, let us look at the dress. This is of very great importance. The bees, as most of us know, do not like rough and fuzzy clothing. The hooks on their legs catch on the hairs, and irritate the bees. There are two classes to deal with—those keeping only one or at most a few colonies of bees, and those making to some extent a business of bee-keeping. The person keeping a few swarms can not well clothe himself specially. Many farmers wear woolen clothing. Their shirtsleeves, with the fuzz found on the surface, is to the bees like a red rag to an angry bull. To put on a coat does not better matters much. I have often noticed, with the open sleeves at the wrist the bees are much more likely to sting. The plan I adopted was to get print sleeves made with an elastic at the wrist, and another at the shoulder, fastening the sleeves at the shoulder with a hook and eye or a safety-pin. The elastic band can be kept well down on the wrist, and many a sting be prevented. The legs should be thoroughly protected and the bees have no way of getting under the covering. I have taken bicycle-clips, or even two ordinary strings (elastic would probably be better), and if I were a wheelman, or had knickerbockers, I would use a device on the same principle as the covering for the sleeves, for the bees could sting through the stockings, and the fuzz would also irritate.

A felt hat should never be used in the apiary. Take the smooth straw; and if you like to rip a portion of the broad rim, and sew it again to give it a more rounding-down shape, so much the better. It will protect more from the sun; and when no veil is worn, the bees are less likely to fly under the rim of the hat.

VEILS.

I have worked much among bees, with and without a veil; and, after carefully weighing my words, I would say it is folly to work among bees, when they are likely to sting, without a veil. The rules for clothing I have given are likely to give confidence to the operator, prevent nervous movements, the result of fear of being stung, and a steadier hand over the hive. Many veils sold are useless because too small. They draw the veil tightly over the nose, and the bees can attack this weak though prominent spot, or the veil comes loose about the neck, and the bee can get under. They should be long enough to allow of being well fastened about the neck, and at the same time not be tightly drawn about the face.

If the bee-keeper is a specialist, or likely to spend much time in the apiary, a pair of linen trousers will be found to be a decided advantage. They are free from roughness of any sort. To allow the hair to grow long is also a protection from stings. By "long" I mean long enough to prevent the bees from stinging through it, and protect the neck.

I have said nothing about a covering for the hands. I can not see any necessity for coverings for the hands. They must make it more difficult to operate, and I could not put up with such covering. If such is desired, extend the sleeves mentioned above so the thumb and fingers only are exposed; or, if more is required, use gloves with smooth surfaces.

THE OPERATION.

Thus equipped go to the hive and gently smoke it at the entrance—just a puff or two—and then remove the cover. Many go up to a hive, and the first thing the bees know the hive-stand or hive is rudely kicked against, or the cover and honey-board are as rudely disturbed, and the bees rush out to resent the attack. Think of a commercial traveler trying to get on the right side of a customer by introducing himself by means of a kick or a cuff! The result in both cases are somewhat similar, if natural inclinations are followed. The frames being exposed, instead of pulling out a frame, crushing bees on either side, gently crowd over adjoining frames; or if you have the closed-end frame, which is better, withdraw the follower, and begin operations, avoiding always the crushing of bees. A bee injured is angered. It throws off formic-acid odor, or, if able, may sting. In either case the other bees may be aroused and put on the defensive.

WHAT KIND OF BRUSH TO USE.

I am not prepared to say. A strong turkey feather or a wing answers very well, but there may be better. In brushing do not let the bees get between the comb and the brush and so crush them. Shove them ahead of the brush with a gentle, quick, and firm hand, and brush the bees into the hive or at the entrance, not under your feet. After the honey season has closed I have avoided handling bees when they are not able to gather. After the honey-flow is over, leave them alone and they will settle down, and, so far as stinging goes, give but little trouble, when the whole neighborhood may be annoyed with cross bees if frequently handled during that time.

Leith, Ontario, Can.

[This article, by the former editor of the *Canadian Bee Journal*, a man who has also had much to do with bees, contains much valuable information, especially for the beginner; and even the expert, in comparing the methods of another expert with his own, will very often pick up some new ideas. So in this case.

Mr. Holtermann speaks of the fact that sleeves open at the wrists invite stings. I have noticed this many and many a time; and it is usually my practice to wear straw cuffs that fit tightly around the wrists, and slip over on the outside of the coat-sleeves, reaching back six or eight inches. But when I visited Mr. Coggshall I found he had a little better scheme yet, and that was long sleeves sewn to gloves with the fingers and thumbs cut off up close to the palms of the hands. This gives a free use of the fingers; and whenever the bees make an onslaught they are pretty apt to strike at the back of the hand protected by the glove, or further up on the glove or sleeve. Of all the painful places to receive stings, outside of the face, that spot is on the inside of the wrist near those veins that stand out so clearly just beneath the skin.

I quite agree with Mr. Holtermann, that a veil that is so scant in proportions that it hugs against one's nose is almost good for nothing. Outside of the eye, the most painful spot on one's physiognomy for the landing of a sting is on the end of one's nose; and when the facing of the veil hugs against that member the bees will very quickly see it and avail themselves of the opportunity.

Speaking of long hair reminds me that a beard is quite a protection. Whenever my veil is off, the bees are pretty apt to strike for my mouth, and either land in my mustache or chin whiskers where I soon make short work of them.

With regard to a brush, I think if our friend Holtermann had the Coggshall, as mentioned and described elsewhere in these columns, he would consider it the most handy for the bee-keeper, and the least offensive to the bees, of any thing ever devised. There is nothing furry or fuzzy about it—just an aggregation of long clean whisks that knock the bees off their feet and off the combs before they realize what has happened.

Mr. Holtermann is now preaching the word of God. We are all, I believe, glad to know that he still finds some time to think of his old friends, the bees. We wish him success in his new profession, his new kind of harvest—the grandest of all—the harvesting of souls. —ED.]

SHOP TALKS
BY UNCLE LISHA

COLOR VERSUS UTILITY; BEES WITH LONG TONGUES; WHAT HAS BEEN AND MAY BE ACCOMPLISHED.

"Good morning, Whitty. When did you come over the mountain?"

"I came over the hill this morning, but found the going pretty hard. I noticed you have been writing in the bee-journal about improving bees. I guess it was GLEANINGS, though, and you have said hardly a word about color. I thought the real yellow bees a great deal better than the darker ones—the yellower the better. Of course, the yellower they are the purer they are."

"Well, no," I replied. "I haven't said any thing about developing color. The facts are, we already have quite enough color on our bees, and I am not sure but more than is desirable. What would you think of a man who was just starting in the dairy business to insist on buying only cows with black tongues and fawn-colored hair, without regard to other qualities? What would be the chance of his succeeding, do you think? I believe I am some like the boarder who found an unusual supply of hairs in his butter, and one day told his landlady that he had no objection to hairs, but would prefer to have them served on a separate dish. Now, I don't object to a bright-colored Italian bee; but if we must have a great deal of it, let us have it served on a separate dish. Let us have a breed for color. Let the skillful breeders keep on until the dark rings are crowded off the posterior end of the abdomen of the worker bees, as the white man crowds the Indian off a log, until they are gold from waist to tip. Such bees would be as useful as canary birds or poodle dogs—perhaps more so. They would be just the thing to show when we have company, or to brag about when other bee-keepers call to see us, or for the children to play with.

> "'A golden hive on a golden bank,
> Where golden bees, by alchemical prank,
> Do gather gold instead of honey,'

may be very poetical, but it is any thing but practical.

"After all, color has a real value if not in excess. By it we can readily tell how our queens have mated, whether with the drones of own choice stock or that of our neighbors' black or hybrid bees. But when a queen has so much yellow blood in her veins that she marks all her female progeny yellow without much regard to their male parentage, color ceases to be a virtue. Besides, it prevents queen-breeders from using some most desirable honey-gathering strains to keep their stock up where it should be. Of course, I am looking at it from the honey-producer's point of view. If I were a queen-breeder I might think differently; but it would not alter the facts."

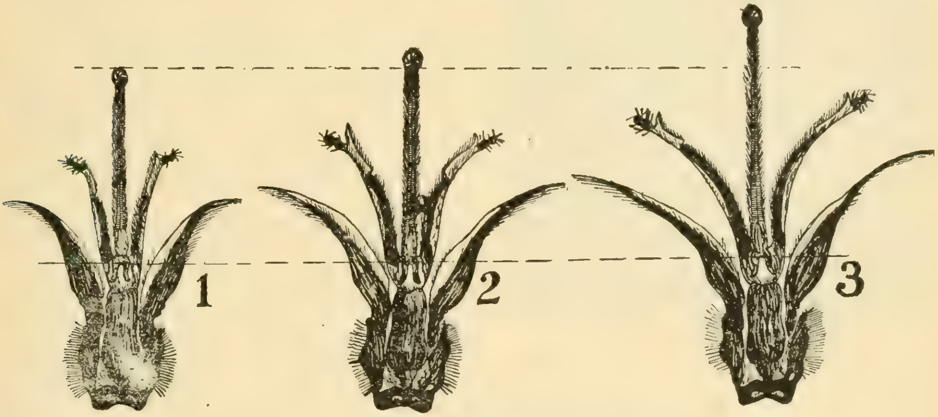
"There, now," said Whitty, who is a rather quiet man, "I did not suppose I was going to stir up a hornet's nest when I spoke of very yellow queens. I notice most of the queen-breeders advertise 'golden Italians,' as though the yellower the better, and somehow I had got it into my head that those queens that produce the very yellow workers were best. But there is another thing I wanted to talk with you about; and that is, if there is any show of our ever having bees that will gather honey from red clover—I mean as freely as bumble-bees do. There is a good deal of red clover over in our valley."

Perhaps I spoke a little warmly on this subject. I replied, "But I have felt a good deal of regret that so much pains have been taken to breed for color with so few far more valuable points or traits of character. I have sometimes thought that the National Bee-keepers' Association could not do any thing more helpful to American bee-keepers than to pass, at their next meeting in Chicago, a resolution something like this:

"'*Resolved*, That we look with regret upon the efforts to breed high-colored bees, and deem three full bands of yellow on Italian worker bees as much color as necessary or desirable.'

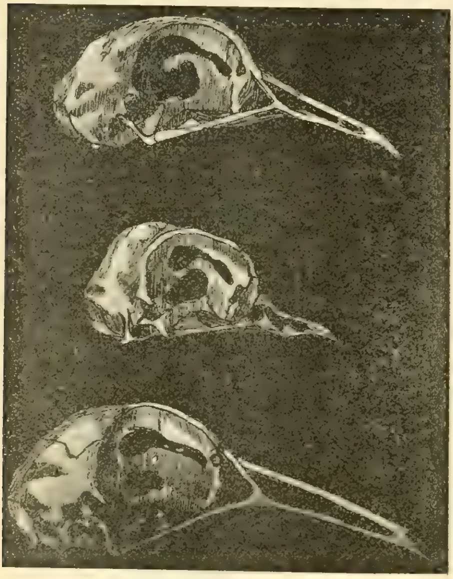
"Such a resolution would at least let the younger bee-keepers know what they thought of color, and establish a standard the same as the rules for grading honey, and at the same time give queen-breeders an opportunity to turn their attention to something of more value than color. The Ethiopian may not be able to change his skin, nor the leopard his spots; but we can all see how the American queen-breeder can change the color of a breed of bees. A few careful, thoughtful men have largely increased the production of honey by selecting and breeding from the strongest and most industrious colonies, and we have at least one well-authenticated instance where swarming has been reduced a half. Now, if swarming can be reduced a half by careful breeding in a few years, it can be reduced three-fourths and nine-tenths with the same care, and probably even more than that.

"If the color of bees can be changed, their industry increased, and their swarming instincts reduced a half, with a few years of careful attention to breeding is there any reason to doubt that bees can be produced with tongues sufficiently long to reach the honey of red clover? All that is needed is to breed with this object in view. The Michigan Experiment Station has reported some very interesting facts in this connection, showing that they have now a strain of Italian bees whose tongues are more than one and a third times the length of those of black bees, and one and a fifth times the length of the average Italian bees. I have asked my son to make a draft of them so we can see how they look on paper. It certainly looks hopeful. But we must not be content with simply increasing the length of the tongues of our bees. We must also decrease the length of the corolla of the red-clover blossom. And here is a nice job for some bright boy, and there will be money in it too. Go to the fields and watch till you find plants of red clover that the bees work on freely, then mark and secure the seed, and sow and cross-fertilize by hand, and in a few years a variety of clover will be produced with blossoms not half the average length of those varieties now in general use. As soon as such a variety is produced, seed can be grown for market when the bee-keepers will fairly tumble over each other to get hold of it. But as it will be many years before such a variety will come into general use, let the good work go on in lengthening the tongue of our bees. All bee-keepers may do more or less by keeping a close watch for colonies that work on red clover, and breed from the queens of such for a series of years. There is little doubt in my mind that much might be done in this line. I shall be surprised if we do not find that those colonies that work best on white clover and basswood are not the same that take most kindly to red clover. Already several colonies have been reported in our bee-journals as working freely on red clover. I ran across some interesting cuts of the skeleton heads of pigeons the other day in an old book I was reading, that interested me very much, as they showed how changes may be brought about by selection. The upper head is that of the wild pigeon of western Europe.



BEES' TONGUES; PROGRESS OF DEVELOPMENT.

The next is that of a tumbler, and the last that of a carrier pigeon. The two lower heads represent breeds that have descended from the wild type represented in the head above. One has a beak only about half, and the other once and a half as long as its ancestor's—a variation of nearly an inch. Now, if the beak of a bird can be changed by man, can not the tongues of bees be lengthened also?



PIGEON SKULLS.

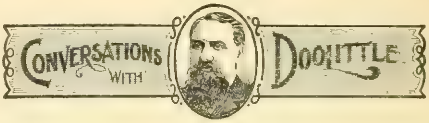
"It is an interesting fact in this connection, that, while a great deal of attention has been given to improving hives and boxes, supers and sections, frames and foundation, and every thing connected with bees, more than eight hundred patents having been issued during the last twenty-seven years on such improvements alone, yet how little thought, comparatively, has been given to improving the bees themselves beyond that of color! It is true we have introduced a number of new breeds during the last forty years, each claimed to be better than any other. I think it is now generally conceded that the Italians are as good as any; still, some prefer black bees or black with a slight mixture of Italian blood. Yet one of their most marked characteristics is their variability, as I think any one who has bought queens from different sources will testify. Indeed, the Italians as imported seem to be a breed formed by nature or climate, without being improved in the least by the hand of man. While horses, cattle, sheep, hogs, dogs, fowls, and almost every thing domesticated by man, are being constantly improved, how little thought has been given to improving our bees by carefully selecting the best from which to rear our queens from year to year! Why should not a bee-keeper take as much interest in improving the productiveness of his bees as the flock-master does his sheep, or the dairyman his cows? What would be thought of a man going into dairying who should build his barn with every modern improvement, and secure the most approved utensils, and then go out and buy his cows without regard to the quantity or quality of milk they would produce?"

"They would call him a fool over our side of the hill," said Whitty, "or something not much more complimentary."

How much more he would have said I don't know, for Esquire Fullam came along just then, driving a cow; and, hearing a few words about improved tools or utensils for dairying, began:

"That is so. One needs the best barns and apparatus for dairying, and ours is the first State to invent and adopt them. But then it is even more important to have improved cows. I have just sold this cow, and am driving her to the station, because last year she did not give me over two hundred and fifty pounds of butter. I tell you, our State is a great place for dairying when you have improved cows and apparatus, and all the conveniences. To-day the cattle are feeding upon a thousand hills, cropping the sweet green grass. I tell you, our State makes the highest-colored and finest-flavored butter in the world. It is a good place to live in too. I tell you, we have a great State."

[I would explain that this article, or, rather, this series of articles, was written several months ago, and it appears that Uncle Lisha has preceded us in all the later developments which were given prominence in our last issue. Uncle Lisha offers us a good deal of encouragement. Now, then, we wait with special interest the report of the Michigan Experiment Station touching on the subject of the comparative lengths of bees' tongues. If there is a marked variation it certainly lies within our power to make the variations greater. Let the short tongues be where they are, but make the long tongues longer.—Ed.]



ITALIAN BEES, CARNIOLAN BEES, AND FOUL BROOD.

"Good morning, Mr. Doolittle. I came over this morning to have a little chat with you about three things which interest me much just now. The first is about the Italian bees which I read so much about. Will you please give me a description of this bee, as I do not see what I wish along this line in the bee-paper which I take?"

"Well, neighbor Jones, I hardly know what you wish under what you term as a 'description,' but I will venture to say that this bee belongs to one of the yellow varieties, to which also belong the Cyprians and Syrians."

"But I am told that the Cyprians are very vindictive and ugly. Is this so? And are the Italians ugly also?"

"As a rule, the Italians are very quiet and gentle, while, so far as my experience goes, the Cyprians are more given to stinging than any variety known. The Syrians are about half way between the two as to their stinging qualities—about like our common grade of hybrids."

"When were the Italians first brought to this country?"

"Italians were first shipped to this country about 1860, while the other two were not brought to our shores till about 1880."

"But are the Italians really a better bee than any others?"

"So far nearly all apiarists agree in placing the Italian bee at the head of all others, both as to ease of manipulation, beauty, and honey-gathering."

"How about comb-building? I read they fail here."

"As comb builders they are not quite as good as the black or German bee, neither do they use as much wax in capping their surplus honey, which gives their comb-honey product a little darker appearance, or what is termed a 'watery' look."

"You said something about ease in manipulation when working with these bees. What did you mean?"

"Italian bees cling very tenaciously to their combs, staying on them, when the combs are handled, very much in the same quiet way that they did when the combs were in the hive and the hive untouched, while the black and hybrid bees very often fall off, or run about in a frightened way. This tendency makes the handling of the frames and the finding of queens, or any other inspection of the inside of the hive and combs, very pleasant; but when we wish to get them off the combs for extracting the honey, or for any other purpose, it is more of a job than with the black or hybrid bees."

"But that would hardly pay for procuring queens of this variety, would it?"

"Well, perhaps not, though I incline to the opinion that it would. However, the main point of superiority in the Italian bee is its honey-gathering qualities. If there is any honey to be had they are away to the fields after it, and will toil incessantly all day for a very little, while the black bees will work very little unless honey can be gathered quite freely. To put it in other words, Italian bees will labor faithfully all day long for only pennies, while the German bees must have dimes, quarters, halves, or dollars if they do work to any amount."

"Can you prove this assertion in any way?"

"Let me illustrate, and then you can tell. I find in my diary that, in the spring of 1872, I had fifteen colonies of black bees and three of Italians. As an experiment a fourteen-quart pail of maple sap was placed in shallow dishes, after adding two pounds of sugar, so as to make a very thin sweet of the whole. With honey, the bees were started at work near this sap, and as long as the honey lasted they came in about the proportion named above, fifteen of the black to three of the yellow. As soon as the honey was gone they took to the sap; but in a few minutes the black bees began to show less in proportion, and kept getting less, till at the end of an hour none but Italian bees were carrying the thin sweet. These Italian bees worked till they carried all of the sap home and had it evaporated down to the consistency of honey, while the black bees thought it not worthy of their notice."

"That is pretty good proof, sure. But what about the Carniolan bees?"

"They are natives of Carniola, and, if I am correct, they were imported into this country through Mr. Frank Benton when he was in the Old World looking up *Apis dorsata*. Soon after their importation there seemed to be a great difference of opinion regarding them. Some extolled them very highly as comb-builders and honey-gatherers, while many more could give no words in their favor."

"But, did you not try them?"

"Yes. During the season of 1885 I procured a queen, said to be as good a Carniolan queen as there was in this country. But from a careful inspection of them for months I could not think otherwise than that they were a very peaceable strain of the black bee. They were said to be of a steel-blue color; but a close observation, with the two side by side, failed to reveal such color further than the black bee shows it. All the mark of distinction I could see was in their being great swarmers, while the blacks swarm only moderately."

"Did you have only this one trial of them?"

"Yes. I gave my experience with them, and some thought I did not have Carniolans in their purity, so offered to send me a queen on trial. I accepted, and had queens from three other parties; but the latter revealed nothing different, except that two of them were mixed with the yellow races."

"How about their honey-gathering qualities?"

"They proved so inferior that I finally superseded their queens with Italians. The main trouble seemed to be that, as soon as the honey harvest came on, they would go to breeding with 'double diligence,' and reared so much brood that the surplus gathered was consumed by the multitudinous brood. That others found them not so good as the Italians is proven by their having comparatively gone from notice, very few breeders of the present day offering them for sale."

"Now a question or two on foul brood and I will not bother you longer. Can you give me some of the symptoms, and also tell me how to cure it?"

"When a colony has this dreaded disease, a few of the larvæ die soon after the bees seal the cells containing them. The capping to the cell soon has a sunken appearance, generally with a small hole in the center. Upon opening the cell the larva is found stretched at full length, having a brown appearance, while all healthy larvæ or pupæ are white. If touched this dead brood is of a salvy, ropy nature, and gives off an offensive smell. From the first few cells the disease spreads rapidly, should it be spring when the disease first appears, till the combs become a putrefying mass, generally during the first season, and nearly always during the second, the stench of which, at this stage, can be smelled a rod or two from the hive."

"Do not any of the larvæ perfect into bees?"

"Yes, at first the most of them perfect; but as the days go by, fewer and fewer of the larvæ develop into bees, so that the population of the hive decreases till they become an easy prey to robbers, when the infected honey is taken off by these robber bees, only to carry the seeds of the malady to the robbers' hive, for the disease is spread through the honey mainly. One drop of foul-broody honey going into a healthy colony dooms that colony from that very moment."

"That being the case, I hardly see how it can be cured at all."

"A careless person rarely cures this disease short of destroying his whole 'outfit' and beginning anew. But a careful, thorough-going man can cure it without losing all of his investment. The cure is to drive all of the bees from the affected hive, and keep them shut up until they shall have digested all of the diseased honey they carried with them in their honey-sacs. They are now hived and fed in a new clean hive, or the old one thoroughly cleansed by scalding, when they are free from the disease. Great care should always be taken that no bees get at the contents of the old hive before the combs are rendered into wax, and the honey and hive scalded."

"Is that the only remedy?"

"Other cures have been recommended, but most of them are ineffectual, except in the hands of an expert."

HEADS OF GRAIN FROM DIFFERENT FIELDS

ALSIKE VS. RED CLOVER; THE INCREASE IN THE HAY CROP FROM GROWING THE TWO TOGETHER; A PRIZE ARTICLE CALLED FOR.

Mr. Root:—I was quite interested in what you have to say on page 537 regarding alsike and red clovers. You say, "It is a difficult undertaking to induce farmers to grow alsike clover in preference to the red;" and, again, "Farmers will grow red clover in preference to alsike." I know that you are correct in your statements as to the country in general; but are you sure that the average farmer understands the good points in alsike clover? and have we done any thing to bring this information home to him?

There are farmers in this State who make a business of growing alsike for seed crops, and they claim that the land could not be put to any better paying use. I know localities where farmers, as a rule, will not seed any kind of meadow without alsike in it. If they seed to timothy and clover, it is alsike and timothy, which makes a heavy growth of the very finest quality of hay. If the meadow is to be all clover, it is half red or mammoth, and half alsike. This, they claim, increases greatly the amount of hay per acre, as the alsike, being finer, stools in between the larger clover, and one or the other makes a good after-growth. I am uncertain now which one it is. Alsike clover is a better self-propagator than red, and stands the moisture of low ground well. It seems to me that, while we are waiting for a race of long-tongued bees, we might profitably do something to increase the acreage of alsike on our respective fields. I will accept the long-tongued bee when it comes. But in the mean time I want some alsike sown near my apiaries if possible. I am not in one of those favored localities where every farmer sows alsike, but there are always a few patches near by. Why not have a prize article on the subject of alsike clover, bringing out its good points, and have it first printed in GLEANINGS and then copied in all the apicultural papers. There are a good many men in Wisconsin who could write intelligently on the subject. Mr. Wilcox, Mr. France, and myself could furnish the names of farmers who understand alsike.

HARRY LATHROP.

Browntown, Wis., July 14.

[We will gladly offer a prize of $10.00 for the best article on the growing of red and alsike clover, and clovers in general, and $5.00 for the second best. These articles are to be submitted to clover experts, and the one which is best will receive the prize of $10.00, and the second best $5.00. They should treat of the growing of clover, both alsike and red, and especially the question of growing alsike in connection with the red, and whether the growing of the two increases the hay crop. It is a very fruitful and important theme, and you have my thanks for the suggestion.—ED.]

GATHERING HONEY AND POLLEN BOTH ON THE SAME TRIP.

There was nothing in my letter to explain my reasons for believing bees carry honey and pollen on the same trip. I think it very easy to see the movements of bees on white clover. By watching them closely I could see them inserting their tongues into the little petals quite distinctly. The bees I was watching had pollen in their baskets; and by the movements of their legs they were still gathering more. I think, according to what I have seen, that bees gather pollen with their fore legs, and deposit it in their baskets also with their fore legs while flying. That is the reason why I am sure that bees do both on the same trip.

W. W. BROCKEMIER.

Sewickley, Pa., July 12.

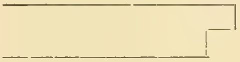
[I can not say positively that you are wrong in your conclusions; but to me it does not appear you have offered indisputable proof that bees gather both honey and pollen at the same time. I see no reason why they should not do so; but when we come to consider absolute proof, we may well look to our bearings. The only authority who seems to touch directly on this mooted question is Cheshire. On page 597 of his "Bees and Bee-keeping," Vol. II., in reference to pollen, he says:

> It is gathered by bees, most generally, simultaneously with honey, and, although usually carried back to the pollen-basket of the third pair of legs, when on the wing, it may be duly stored without flying, as I have often noticed when bees gather from some composite flowers, such as single dahlias.

There, friend B., you have so good an authority as Cheshire to support your views. But even Cheshire has been found to be by no means infallible on several little points, and even he may be wrong.—ED.]

FLAX AS A HONEY-PLANT; HOW TO MAKE A SCRAPING-KNIFE.

Allow me to call your attention to flax as a honey-plant. There are several hundred acres close to me, just in bloom, and it furnishes the principal crop, except goldenrod, in the fall. My bees swarmed on the 23d of June. One colony came out on the 17th, 18th, and 20th, and did not cluster, but went back into the hive, and at last came out and was hived on the 23d. I have one super nearly full, and one about half. I have at present only 3 colonies. I use a knife which I use for scraping sections. It is made of a common case-knife. Break off the end so it will be square, then grind it with a notch in the end as in diagram.



Marshall, Minn. JESSE JENNINGS.

[A scraping-knife similar to what you show has been illustrated in our columns before. The principle of it is all right.—ED.]

ROUND SUPER SPRINGS; WHO FIRST INVENTED THEM?

In GLEANINGS for 1887, page 466, you will find a description and illustration of my super spring. On page 543 is something further on the same subject. While Mr. W. D. Wright (page 475, current volume) and others may have preceded me in the invention of such, I believe that I was first in giving the super spring to the public. I care, however, very little for priority. The main thing is that any spring which accomplishes the desired result is away ahead of any wedge. The (so-called) wedge, which I have seen in supers of your make, is no wedge at all, but a plain strip of wood of equal thickness at both ends. Mr. Wright's spring has the advantage over mine that it is simpler in construction, and easier to make. It can also be made to go into a narrower space than mine. If I did not already have a full supply of my own I would adopt Mr. Wright's pattern.

CLEANING PORTER BEE-ESCAPES.

Some time ago I discovered that my Porter escapes were all clogged with propolis to such an extent that the two brass springs within could not move at all. I took the escapes (of which I have 25 in use) out of the boards and boiled them in concentrated lye. Rinse in cold running water. They are now clean, and as good as new. I got the idea from reading Dr. Miller's way of cleaning T tins. This may be of assistance to some one.

WM. MUTH-RATHMUSSEN.
Independence, Cal., July 6.

[Turning back to our June issue for 1887 I find a description and illustration of round super-springs by Wm. Muth-Rasmussen. These springs are a little different in construction from any thing that has heretofore been shown; but they were made of round wire, and so constructed that the tension of the wire would cause a pressure on the sections in the super; but Mr. Wright says he introduced his springs in the spring of 1883, so that he precedes Mr. R. by about four years. But I suspect we shall have to give the credit for the basic principle to Capt. J E. Hetherington. He first conceived the idea of squeezing up sections in the super by means of a continuous and yielding pressure brought about by steel springs.

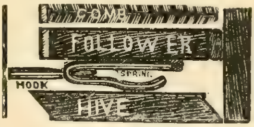


Fig 3

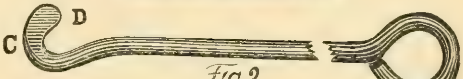


Fig 2

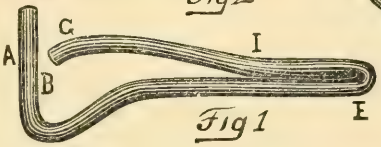


Fig 1

It is very seldom that so much propolis is gathered that the Porter bee-escape would be clogged in the manner described. Mr. R. must have left them on the hive for a considerable length of time; for usually they are not supposed to be over the bees for more than 24 hours; but in case they do become waxed or daubed with bee-glue, then Rasmussen's scheme of cleaning, or Dr. Miller's, rather, is the one to use.—ED.]

BELGIAN HARES AND BEES GOING WELL TOGETHER.

I wish to say in connection with your editorial note on page 446, that I have tried the combination of "bees and Belgian hares." They work together. Hares are more easily raised than chickens (I have all three), and are very healthy and hardy if kept in *clean* quarters, and fed sensibly and regularly, and healthy stock were gotten at the start. Your advice about a beginner going cautiously at first is very good. A trio (one buck and two does) is enough to get a good start, and they will increase about as fast as the beginner's knowledge of their care and needs does. Also there are now quite a number of books and periodicals devoted to their care and breeding, and, as in bee-keeping, a good text-book is one of the first essentials—in fact, *the* first.

ERNEST W. HALSTEAD.

Fort Stanton, N. M., July 12.

SMOKER FUEL, AND IGNITING THE SAME.

In your issue of July 1st you recommend planer chips as fuel for smokers, but seem to find them rather difficult to get well started. For over ten years I have used such fuel in preference to all others, and for much of that time used kerosene to start them with; but I find a small handful of charcoal to be better. I ignite the charcoal with a bit of burning paper or a few shavings, and, after a few puffs of the bellows, the smoker is filled with planer-chips, and ready for use. It is not necessary to have commercial charcoal for this purpose, as the siftings from the ashes of any wood fire will do nicely. A. C. MILLER.

Providence, R. I., July 13.

[When I was working actively in the apiary day after day it was my practice to have a spring-top oiler, such as is used for lubricating machinery, filled with kerosene. The smoker was partially filled, and then a few squirts of the fluid were thrown on. A lighted match was dropped on it, the smoker closed, and the bellows worked for about a minute. When live embers began to appear, more fuel was added until the fire-cup was full. This always worked very nicely, but somehow our people have not got into the fashion of using it of late. Live coals are the most convenient of any thing to light smokers, providing the kitchen stove is handy; otherwise I prefer the kerosene and the regulation match.—ED.]

BEGINNERS' QUESTION BOX BY E. R. ROOT

J. H., Ga.—We are not able to tell you what was the cause or the source of the bitter honey without receiving a small sample, and might not even then. But there is a good deal of bitter honey that comes from different sources. As between the two locations, we would choose the one near the swampy ground rather than on the hill, because the fruit-trees would not have very much effect on the yield.

J. M. S., Maine.—In reference to your question in regard to the queen in the swarm, that does not lay, I would suggest that possibly she has been injured in some way. If so, it may be best to introduce another queen. But it is well to consider that, after a honey-flow, queens are apt to stop laying entirely. Before replacing the queen I would advise you to feed the colony about half a pint of sugar syrup daily for about a week. If she is good for any thing she will begin laying in short order.

W. P., Ill.—The probabilities are that the season has been so poor in your vicinity that the bees have had no incentive for swarming. They are strong enough; and if honey had been coming in they would have swarmed. If other colonies are gathering honey, and this one is not, then possibly the bees are queenless, or perhaps the hive is in too hot a place, with too much sunshine. With regard to getting a colony out of a chimney, there is no way of doing it but to crawl up the chimney, if it is large enough, and take it out. The bees should be smoked first, of course, and the one who undertakes to get them out should be well protected with a veil, gloves, and have his trousers legs tucked well down in his stockings, and his sleeves tied also.

J. K., Miss.—When bees take a notion to swarm out every day as often as you put them back, there is no use in trying to make them stay in that hive or in that location. You can lead a horse to water, but you can not make him drink. When bees swarm out a second time from the place where they have been hived, I would by all means advise hiving them somewhere else. The more you hive the bees back, the more furious they are to get out the next day. I remember I hived one back one day four or five times, and actually nailed wire cloth over the entrance; but those rascals pushed and pushed, and tried to remove it. I kept them confined two days; then when I removed the cloth, out they poured. I finally hived them in an entirely new location, giving them unsealed brood, and they thereafter stayed at home.

R. L. H., Ind.—I am always pleased to answer questions for our patrons, and endeavor to give a private reply when requested; but sometimes, owing to the crowd of correspondence, letters with questions are occasionally overlooked, or delayed beyond the time when the answer would be of any value. Bee-paralysis in the North will usually disappear of itself; but sometimes it is severe, and in such cases colonies having it should be isolated in a location at least a mile and a half from the other bees. If other colonies have it, they should be placed along with it, and there establish a quarantine apiary. If your bees had spring dwindling, and recovered, of course there would be nothing to fear now. In a colony that has no eggs, there is probably a virgin queen that has not begun to lay yet; but to make sure that she has not been lost on her fertilization trip, I would suggest that you give it another frame of unsealed brood so that, if she is lost, the bees may start new queen-cells, when you may be sure that they are queenless. If you have any dead brood in your apiary, the matter of which ropes slightly, it may or may not be foul brood. But the various forms of the other diseased brood will rope very slightly—one-eighth of an inch, perhaps. When we have a clear case of foul brood, the dead matter should string out from a toothpick at least an inch. In all probability you had a case of pickled brood, which will rope very slightly, and in most localities this will disappear of itself; but if not, it should be treated by shaking the bees on to new frames of foundation, and the old frames should be destroyed—that is, burned or buried.

EDITORIAL BY E. R. ROOT

I AM just now engaged in the fun of making lantern-slides for stereopticon work that is to be given at the coming Chicago convention.

ELSEWHERE in this issue I give a program of the next National convention, to be held in Chicago on the 28th, 29th, and 30th of the present month. It will be noted that there will be fewer papers for each session than ordinarily given; but the intention is to give more time for the consideration of the Question-box. There will be a set of live practical questions prepared, and these questions will be handled by such men as Dr. C C. Miller, E. T. Abbott, Hon. R. L. Taylor, Dr. A. B. Mason, O. O. Poppleton, and others.

THE frequent and copious rains that we have been having every few days, in our locality at least, have made a magnificent growth of sweet clover. This plant has now been in bloom for nearly a month, and gives promise of being in bloom for at least two weeks longer. The bees in our locality have been busy on it from 9 o'clock on; and at one of our out yards sweet clover (what else can it be?) has made quite a showing in the hives. If we can only be blest with a fall flow (and certainly all conditions seem to favor it) the season will not be so bad after all.

THE HONEY SEASON AGAIN FOR 1900.

OUR friends have been kind enough to continue sending in reports from all portions of the country. The revised outlook stands about as in our last issue. There is very little change to make. Taking it all in all, the season is no better than last year, which was considered poor, although there have been special favored localities where quite large crops of honey have been secured.

EXTRACTING; BRUSHING BEES OFF THE COMBS; UNCAPPING

AS many leave their extracting until after the honey-flow when they will have more time, perhaps a few hints regarding the practices of the most extensive bee-keepers in the country will be of value just now. I have been present in a number of apiaries during extracting time, and I will endeavor to give a few of the methods that are used.

The extractor should be of course anchored down securely. As to whether it should be elevated on a box high enough so the honey can run into a barrel direct, seems to be somewhat of a question. It is urged that, when the extractor is so high, it is very inconvenient to put in and remove the combs; that the machine should be low down where it can be got at easily, even though it does necessitate emptying a pail or other shallow vessel every few minutes, that may be placed under the honey-gate. So far as I can gather, the majority of honey-producers favor the lower elevation (see illustration on page 608). As the honey runs into the pail its quality, and whether or not it has dirt in it, dead bees, or particles of wax, can be easily seen at a glance. True it is that a strainer can be placed over the gate to catch every thing in the form of loose particles of foreign matter. But if the honey runs into a pail, its specific gravity can be told by the way it runs out of the gate.

Where square cans and kegs are used, large funnels are placed in the tops, or bungholes; and the honey, as fast as it is extracted, is poured directly into the marketing-packages.

In California and in the West, where the liquid article is produced by the carload, it is the practice, wherever possible, to have the extractor-building on the edge of a side hill—the building to consist of a basement, or lower story, on a level with the bottom of the hill, and a second story on a level with the top of the hill. In this case the combs are run into the building into the second story, or what might be called the first floor. The extractor is mounted on the floor, being securely anchored. A pipe leading from the honey-gate connects with a large receiving-tank of 5000 or 10,000 lbs. capacity below, said tank being raised up just high enough to allow the honey to flow into cans of 60 lbs. capacity. Where the conditions in the lay of the land favor such a structure, it is by all odds the most convenient.

I have in mind one apiary where the combs are run down a slight grade from the apiary into the first floor of the extracting-house. The honey is extracted, and run directly from the extractor into a receiving-vat just below. Here it is drawn off into square cans, and the latter are loaded on to the wagon, ready for the market.

A great deal will depend upon how extensively one is engaged in the business, as to which method he will adopt. It was our practice, years ago, to elevate the extractor enough to run the honey directly into the barrel; but I now know that the bungs had a fashion in some cases of pushing out because of a little thin honey mixed with the other. This thinner honey would rise to the top and cause a ferment. I believe it is becoming less and less the practice to barrel honey, and more and more to put it in square cans.

ABOUT GETTING BEES OFF THE COMBS.

In these days of perfected bee-escapes, it seems like folly to think of brushing and shaking; but where out-yards are located miles from home it is very often inconvenient to make two trips—one to put on the escape-boards and the other to take off the honey a day or two afterward. As I have already stated, Mr. Coggshall's practice is to smoke the bees down in the super or top story by flapping the quilt on top of the extracting-frames while the smoker is being worked. This causes the smoke to drive the bees, at least half of them, down into the brood-nest. The frames are next shaken when half drawn from the super, and last of all brushed with a long whisk-broom having the strands thinned out.

And right here it might be well to state that a good many have a very wrong idea as to how this Coggshall brush is to be used. The combs should not be swept in the same way one would sweep a floor; but the broom should make a *side* sweep, so that the *edges* of the strands may strike the bees, and not the *ends*, something as shown in the illustration on page 605. Mr. Coggshall has his broom tied to his waist; and the moment he is through using it he simply lets it drop; and when he is ready for it again, it is in his hand in an instant.

UNCAPPING.

Of all the different uncapping-devices, I do not know of any that is quite so handy and so convenient as the Dadant uncapping-can, see page 610. It has a large capacity for the cappings, and also a large capacity for the drainings. It is convenient in height, light in weight, and when the uncapping is completed it can be covered, and the cappings allowed to drain for several days if need be.

THE NATIONAL CONVENTION AT CHICAGO; SOME OF ITS ATTRACTIONS.

If there is any one feature that our bee conventions have lacked in the last few years, it has been stereopticon work. It was introduced for the first time, if I am correct, in the history of the National, at Philadelphia, by W. E. Flower, and was a marked success. It was also a distinct and prominent feature at the New York State convention, held at Geneva last winter.

For a long time I have been wishing for a first-class stereopticon, and have now finally purchased one using a powerful electric light of 3000 candle power—one that the manufacturers tell me will give the very finest and best results. This will be in evidence at the Chicago convention on Wednesday and Thursday evenings. On the first evening there will be thrown on the screen some pictures of some of the prominent bee-keepers of the day; Dr. Miller will pay tribute to Langstroth, and Dr. Mason will come in for the jokes. The views will also embrace snap-shots from many apiaries of the United States, and even from old mother England. In connection there will be shown briefly the anatomy of the bee, special reference being given to the tongue, about which so much interest is now being manifested. The methods of measuring tongues will be illustrated, together with a view of the variations already discovered. Thursday evening, the last session, some of the beautiful photos secured by Mr. Hutchinson on his recent trip through Minnesota and Wisconsin will be thrown on the screen. These will be some of the finest pictures that were ever projected, and no one who can come should miss this treat. Of course, Mr. Hutchinson will tell us about them.

On both evenings will be shown views of the various hive-manufacturing plants of the United States. Every establishment, so far as I know, will be represented, or at least an effort will be made to secure photos of each. A glance at the program, p. 630, will show that such men as Thomas Wm. Cowan, editor of the *British Bee Journal*, and perhaps the most distinguished bee-keeper in all Europe, will have a paper. There will be another paper from Dr. W. R. Howard, the scientist who has done more in the study of the diseases of bees than, perhaps, any other man in this country. R. C. Aikin, President of the Colorado State Bee-keepers' Association, and one of the most practical bee-keepers of the world, will be present and discuss a live issue.

There are other equally good papers, but these are only samples of the good things that will be spread before the bee-keepers who will be fortunate enough to attend that convention in Chicago. The railroad rates will undoubtedly be very low, so it will be possible for many to make a very pleasant and enjoyable trip. After the convention there will be ample opportunity for any who may desire to take in Lincoln Park, the old World's Fair grounds, and a hundred and one interesting things in the most hustling city of the United States—Chicago. Lincoln Park alone is worth the trip.

I nearly forgot to say that we will endeavor to have pictures taken of the members of the convention, probably during the first session. If our plans work well, this picture will be thrown on the screen Wednesday or Thursday evening; so if you wish to see "yersilf" as ithers see you, come and see "yersilf" projected on the screen.

EXPERIMENTS WITH FOUNDATION BY PROF. C. P. GILLETTE.

There has recently been issued from the Agricultural experiment Station, Fort Collins, Col., Bulletin No. 54, detailing a very interesting series of experiments and observations on foundation, by Prof. Clarence P. Gillette, a gentleman whom we have already introduced to our readers, and who seems to be especially interested in bees.

The object of Prof. Gillett's experiments was to show the economic values of the different weights and grades of foundation; how much of the wax is actually utilized by the bees; whether the base, or septum, is or is not reduced in thickness, and whether or not the cell-walls built from ordinary foundation are as light and delicate as those of the natural article itself. His own conclusions are thus summarized at the close of the pamphlet:

> 1. Bees use freely the wax in foundation to extend both the midrib and the cell-walls of honey-comb.
> 2. The heavier the foundation used, the heavier, as a rule, will be the comb built upon it.
> 3. If the midrib of a foundation is much lighter than that of natural comb, the bees are likely to strengthen it by adding wax to the bottom of the cells. Possibly this is done only where there are actual perforations of the comb.
> 4. If the midrib of the foundation is thicker than the midrib of natural comb, it will result in a comb with a midrib thicker than the natural. Or, to state it differently, the bees will not thin the midrib of a foundation down to the thickness of worker comb built in the natural way.
> 5. Midribs of foundation that are not more than .17 of a millimeter (.007 inch) in thickness, are thinned little or none by the bees.
> 6. Drone comb has a thicker midrib and heavier cell-walls than worker comb.
> 7. A foundation with a heavy midrib and very slight

cell-walls will still produce a comb with heavy cell-walls

8. Very high cell-walls in foundation are not cut down to the thinness of cell-walls in natural comb.

9. The thin and extra thin and the "1899" deep cell foundations produce a comb that approximates very closely the lightness of that which is naturally made by the bees.

10. When heavy foundations are used, the extra weight of the comb built upon them is due more to the extra weight of the cell-walls than to the heavier midrib.

11. When very light foundations are used, the somewhat heavier comb is due almost entirely to the midrib being heavier than that of natural comb.

12 When foundations containing an abundance of wax to build the entire comb are used, the bees still add much more wax, sometimes nearly enough to build the comb without the help of the wax in the foundation.

13. Wax seems to be given with the best economy when the midrib of the foundation is of the thickness of the midrib of natural comb, and when there is a small, or at most a moderate, amount of wax in the cell-walls.

14. Poorly attached combs in sections seem to be more the result of weak colonies and poor honey-flow than to the kind of starter that is used; though large starters and strips of foundation in the bottom of the sections do help to strengthen the union of comb to the section.

15. Separators between the sections are essential to the best results in producing comb honey.

16. The thicker the comb, whether natural or artificial, the greater the proportion of honey to wax in it.

17. In natural worker comb, one inch thick, the proportion of wax to honey is between 1 to 20 and 1 to 25 by weight.

In the main, the results of his experiments seem to agree very well with those made by Mr. Weed, with one or two exceptions; and that is, on the point as to whether the bees reduce or thin down the thick midrib of ordinary medium brood foundation, and whether the cell-walls of foundation are thicker than those of ordinary comb. In referring to the table on page 11 of the bulletin, which, by the way, is a very interesting one to study, Prof. Gillette says:

> If we examine columns four and five we shall see that the increased weights of the examples of comb on artificial foundation were due more to the extra wax in the cell-walls than to the increased amount of wax in the midribs in cases of the heavy foundations, but not in cases of the thin and extra thin super, or "1899" deep-cell foundations.

Elsewhere, in referring to the same matter, he says:

> With this additional evidence, it seems impossible to avoid the conclusion that heavy foundations result in combs heavier than the natural, and that the increased weight is due both to thicker midribs and heavier cell-walls, but much more to the latter than to the former in cases where heavy foundations are employed, even though much wax is left unused in the midrib.

Strangely enough, I get almost the opposite conclusion after a careful study of the table. The experiments that Mr. Weed conducted in my presence also seem to support my interpretation; namely, that the increase in the weight of comb made from heavy foundations is *generally* due *more* to extra wax in the *midribs* than to the extra wax in the *walls*. In the table on page 11 of the bulletin, for example, we find that a comb of medium brood 1.30 inches thick and one inch square had a midrib that weighed 6.87 grains, while the cell-walls weighed only 12.63 grains. Comb of the same size, built entirely by the bees, without foundation, 1.33 inches thick, had a base weighing 2.20 grains, while the walls weighed exactly 10. Now, if we subtract the 2.20, the weight of the midrib of the natural comb one inch square, from 6.87, the weight of the midrib of a one-inch-square comb from medium brood foundation, we have as a difference 4.67 grains, while the difference in the weight of the walls between the two is only 2.63 grains. The difference in midribs in this case is nearly twice as much as the difference in the walls. Take another example: Another medium brood comb ¾ inch thick, compared with the same thickness of *natural* comb, shows a difference in midribs of 3.45 grains, while the difference in the walls is only 1.95 grains. I find just two other sets of figures that show a slight increase by half a grain for the wall over the midrib; but all the rest support my understanding of the table.

A careful study of the photographic reproductions given in this bulletin seems to bear out also the assumption that the increase in weight is due rather to the septum than to the increase in the wall.

But Prof. Gillette's tables do show that the bees reduce the bases of heavy and medium brood foundations slightly more than I have been led to believe from Mr. Weed's experiments, and that the bees also make a slight increase in the weight of the walls when the comb is built from heavy and medium brood over those walls built in natural comb.

The knowledge gained from this bulletin is important and very valuable; and while to me, at least, it does not change materially the conclusions arrived at by Mr. Weed, it goes to show the great importance of making all the foundations with bases practically as thin as the bees make them, whether for brood purposes or for sections. While it has not been possible, from a mechanical point of view, to make all foundations with such bases, the Root Co. has been working toward that end, and its foundations of 1900 have much thinner bases than the foundations of 1898 and the fore part of 1899.

Prof. Gillette's tables also show considerable variation in building of cell-walls; and a careful study of the figures shows to me that the surplus of wax in foundation (and we must have a surplus to keep the sheets from sagging) should be put in the *walls* of the foundation itself. But the Root Co. is striving to reduce the wax, both in the walls and in the bases, and hopes to have, before two or three years roll by, a brood foundation as thin as that now made for super, but which shall have incorporated in the wax itself very fine slender wires, about No. 40 size. Such foundation would be a great saving in first cost to the bee-keeper, because now he is obliged to buy a foundation for brood-frames that has a surplus of wax, not because the bees need it in drawing out the combs so much as because it is required to keep the sheets from sagging while being drawn out.

While these experiments seem to modify in part some of the conclusions made by Mr. Weed from his experiments, yet in the main they corroborate his principal propositions. There are some other points that I wish to speak of, but I shall have to defer their mention until our next issue.

OUR HOMES,

BY A. I. ROOT.

Be ye wise as serpents, and harmless as doves.—MATT. 10:34.

Friend Root:—If I may presume to call you so. It is supposed to be helpful to a man to be given an opportunity to see himself as others see him. "As others see him," I take it, refers to the view or estimate of the man by those of a different way of thinking, rather than of those of his own especial class. I have just now been reading GLEANINGS, July 1, page 540, written professedly in the interests of Christianity. The honesty of the profession I do not question. I do, however, think the move a mistaken one. Christ never worked on that line. The spirit that pervades the writing is not his—quite a different one indeed. Can you quote a single instance in which Christ manifested any such show of hostility toward a sinner, no matter how vile? The one thing that excited his righteous indignation and prompted him to make use of severe language was the spiritual pride and intolerance of the Pharisees. Love, and not legal restraints and penalties, was the force that he employed and advised others to employ. He brought his influence to bear, not against the acts of men, but upon their hearts. You, and those with you, write and talk and act as if liquor-drinkers and liquor-dealers were wholly beyond the pale of Christianity. Drunkenness was not unknown in his day, and yet he had less to say about it than some other sins that are not, as times go, in such bad repute. Consider, for example, the answer that he gave to the young man who went to him and asked him, after having rehearsed all his good points, what further might be required of him. It never seems to occur to the so-called temperance people to reflect upon what may be the effect of their attitude toward the intemperate class in advancing or retarding the cause they profess to have so much at heart. Why assume that liquor-dealers are not to be regarded as amenable to Christ-like influences, but only to be kept in order by fear of the law? From no one thing has the cause of Christianity so suffered as from the intemperate zeal of its followers. What else but that ought we to blame for the atrocities committed by the Spanish Inquisition and other like infernalities perpetrated by the stronger sects of professed Christians upon the weaker, with the honest though awfully mistaken object of putting down error and aiding in the spread of the religion of Christ? Is it not a dangerous spirit to arouse? Under its influence a sort of insanity possesses the men who foster it—a variety of the disease that attacks men in the mass as distinguished from the more common sort that affects individuals, and which latter is by much the less dangerous of the two. After making due allowance for the exaggerations of temperance orators it must be confessed that the evils arising from the excessive use of alcoholic liquors are very great; *but* do you think it is a less evil to set two large classes of the community, the one against the other in bitter hostility? Christianity, or the name of it, more correctly speaking, has been many times too often used as a cloak in the furtherance of designs neither Christian in their essence or methods, and it has suffered accordingly, at least in reputation. This is so unfair to Christianity that one ought to be very sure, after having subjected himself to a severely critical examination, that he is so perfectly clean inside that he will not soil the cloak by putting it on before he ventures to do so. You, I fancy, friend Root, are an impressible man—one who is apt to be led away by his feelings before his naturally sound judgment has been allowed a fair show in the premises.

What I have written may serve as a hint sufficient to induce you to go back and examine the course you have taken, to determine whether it has been quite straight, and on solid ground, as your utterances have been public.

You will not, I hope, think I have taken any undue liberty with you. You are, like myself, not a young man, and so are able to take things coolly. This is not, of course, intended to be used for publication, neither is it designed to draw you into a discussion. Discussions, as a rule, seem to result in making both parties more set in their original positions. It is just a suggestion for your own private consideration, and nothing more. W. O. EASTWOOD.

Whitby, Ont., Can., July 8.

Our readers will note that the above letter was not intended for publication; yet I take it, nevertheless, that our good friend E. will not object to having it appear in print providing I desire to use it so; and I would thank the writer for having called attention in his very kind yet forcible way of presenting one side of this matter, and a side that we all need to ponder and consider *again* and *again*. Jesus did, it is true, come from heaven to earth to bring *peace and good will to mankind*. His mission to earth, as I take it, was as a mediator between God and man; and I have sometimes thought the great Father especially desired that his work should be accomplished particularly along the line of non-resistance. You will notice it shines forth in all his talk and teachings; and we can not wonder greatly that a large religious body has made it a special feature of their creed—non-resistance to evil. They do not even go to law, and they have accomplished wonders along that very line. I confess that at one time in my life I had great faith that righteousness might entirely triumph over iniquity through love and peace and good will.

Some years ago I became pretty well acquainted with an old gentleman, a bee-keeper, who belonged to the sect that believes in non-resistance. I asked him a great many questions. He said they never went to law, but he believed that at times they got some friend to transact such business for them. Not very long after this talk an unprincipled young chap from a neighboring city began to pay "attention" to a lovely sixteen-year-old girl, the daughter of my friend. The father objected, and ought to have ordered the young man from his premises. But his religion prevented him from getting into a quarrel. The young scapegrace evidently *presumed* on the parent's non resistance. He ruined the girl, and then added another crime that sent her to a premature grave. Had the young fellow been told he would have to marry the girl or take the penalty of the law, the two young people might have been living honest and consistent lives at the present time. The father would not resort to law or any thing else, so the young man had free swing, and got away scot free. The event brought the gray-haired father down to his grave. Of course, there are times when it is right and proper for one to die the death of a martyr—to *die* that the world might be made *better*. But this old friend of mine and his simple, honest, innocent, childlike girl, died that this vile chap might be made *worse*, and go right on, hunting up another victim as soon as he could find one. Will any father undertake to say this is doing as Jesus would do? Does not such an event make us feel glad that Jesus once said, "Think not that I came to send peace on earth: I came not to send peace but a sword"?

Our good friend calls attention to page 540, July 1. I presume he alludes to what I said about wresting the reins of government from the hands of wicked men; and then he adds, "Christ never worked on that line." He says further, "Can you show a single instance in which Christ manifested any such show of hostility toward the sinner, no matter how vile?" I honestly admit it is pretty hard to find anywhere in our records of the life of Jesus that he ever seemed very hostile or severe to any *penitent* sinner. One might almost imagine they did not have any such wholesale wickedness in his time as is to be found just now. And it is also very likely true that he was more severe on the hypocritical Pharisees than on any man who fairly and squarely, by actions, if not in words, *acknowledged* himself to be a sinner.

I have talked a great deal about that new phrase that has come to us—"What would Jesus do?" and our good friend E. seems to think I have a wrong conception of what Jesus did do or would do; and if I have, I am glad to be set right. Jesus never performed any miracle to damage or injure anybody. It is true he caused the death of the swine, when his casting out the devils as he did caused them to plunge down into the sea. But no human being ever suffered, so far as I know, from any direct exhibition of his divine power. People were healed, and relieved of pain right and left, and that seems to have been especially the dear Savior's mission. But, friend E., have you considered that, after he left this earth, Peter invoked that same divine power, and struck with instant death both Ananias and Sapphira? Did Peter make a mistake or lack in judgment? If so, how can it be that God honored his prayer, or his command, if you choose? Again, Paul struck a man with blindness by his command, and the Holy Spirit honored him too. There are, perhaps, other instances of like nature that took place after Jesus left this world.

You say, "Love and not legal restraints and penalties was the force that Jesus employed and told others to employ." Now, please bear in mind, dear friend, we are not arguing —we are certainly striving for the truth; for you truly say in your closing words, "Discussions, as a rule, seem to result in making both parties more set." May the Holy Spirit guide me and help me to avoid any thing that would have the effect of making either yourself or myself the least bit contrary. Now to go back.

When Jesus drove the money-changers out of the temple he used force, even though it was a gentle force. They gave way, and obeyed; but I have sometimes conjectured that they did not even know themselves just why they obeyed him so quickly. Dear friend, I can not think you have read my writings very long, or you would hardly suggest that I talk and act as if those in the liquor-trade were beyond the pale of Christianity. May God be praised that we have hundreds if not thousands of bright and shining lights in the Christian church who were at one time in the liquor-traffic or in the chains of the liquor habit. John G. Woolley, the nominee of the Prohibition party, is one of the brightest examples; in fact, his history often makes me think of Paul himself, especially when I hear him speak, or read his stirring addresses. I personally know that the members of the Anti-saloon League, at least a great part of them, are always ready to lend a helping hand to any poor soul where it seems possible to get him to make even a start from darkness toward the light. I myself am largely responsible for advising the League to pay greater attention to *legislation* than it did at one time. It has certainly occurred to you that the great Master himself said, "I came not to bring peace on earth, but a sword;" and then if you read a little further in that tenth chapter of Matthew you will notice he says, "I am come to set a man at variance against his father, and the daughter against the mother," etc. Mrs. Root asked me not very long ago if I did not believe the fights we have had here in Medina in endeavoring to enforce the law against liquor-selling were doing almost as much harm as good. She suggested that it was stirring up hard bitter feelings, arraying one side of the town against the other, making divisions in families, and making the patrons and venders of the stuff *uglier* and more *vindictive* than they had ever been before. While I was forced to admit the truth of what she said, I told her I could not see any other possible way. We have tried again and again letting things drift along in order to have peace and good will. Yes, we have all tried it, not only in our little towns but in our great cities. Shall we permit law-breaking to go on unrebuked just because it stirs up angry men and provokes strife? God forbid. Why, dear friend E., the Master himself provoked hatred and bitterness, even to calling up murderous thoughts *wherever* he went. Even with that wonderful life of his, so pure and innocent, and free from offense toward everybody, the Jews sought to kill him at almost every turn. Let me give you just one illustration. When he brought Lazarus back to life, and restored him to his friends, one day had scarcely gone by before his enemies were planning to put him to death. One of them, the high-priest, Caiaphas, even went so far as to say, "It is expedient for us that one man should die for the people, and that the whole nation perish not." Jesus' only *crime* was in giving back to that beloved household the brother who had passed the gates of death. Finally the bitterness of his enemies was so great they *did* put him to death on the cross. Yet he tried as never man tried before to avoid offense and to soften the hard hearts of his persecutors by his lamblike meekness and humility. Are we called on to do as he did in this matter? Does God desire or did Jesus himself expect his followers to submit meekly to *every* indignity and atrocity? Dear friend E., somehow I have a hope that you are honest enough and kind enough to *admit* that you are not able to decide *just* what Jesus would have us do in all matters of human life. Let me digress a little.

Some years ago a neighbor of mine was in the city of Columbus. He was near the great depot, on the platform, a little way from other people, when some ruffians proceeded to rob him. They first knocked him down, but he was still able to call for help. Now, this man had done nothing to call forth bitterness and hatred. He was attending to his own business, and was not, if I am correct, even imprudent. No one would think of his being attacked in such a public place. Well, these fellows who were robbing him, or trying to, grabbed him by the throat, and commanded him with horrible oaths and curses to shut up or they would kill him. Why, if I were to tell you the language they used, and of the names they called him because he kept calling for help, it would almost make your blood run cold. What called forth or stirred up this fierce passion and hatred they exhibited? They hated him, and threatened with foul oaths and curses to *kill* him, just because he didn't hand out the money that was honestly his own. Shall we as followers of Christ Jesus submit meekly to such treatment as that? Could any *good* come from permitting oneself to be murdered and robbed? Would he not, on the contrary, be guilty of a crime against *humanity* if he bore it all and made no protest? Does not the obligation we each and all of us owe to society *demand* we should do all in our power to uphold and have our laws *enforced?* What ought my friend and neighbor to have done under the circumstances? You see it is not exactly a question as to *what* Jesus would do, but what would he have *us* do? Perhaps some of the friends will suggest there are places in the life of the dear Savior where he declared he did *not* come into the world to do away with the enforcement of law. He once said to the Jews who tempted him, "Render unto Cæsar the things that are Cæsar's, and unto God the things that are God's."

The incident I have given was a small private matter — I mean the one in regard to the burglars. While I write, the government of this country is guilty, at least indirectly, of carrying intoxicants to the inhabitants of the Philippine Islands — the ignorant heathen whom we are undertaking to civilize. I do not think they are doing it according to law. The Presbyterian, Methodist, and other churches have collectively uttered vehement protests. The harm they are doing is a thousand fold greater—in fact, it is not to be compared to the indignity my neighbor suffered at the hands of *two* outlaws; because it is going to stir up ill feeling, and possibly *war*, shall we, as followers of Christ Jesus, let the thing go on?

Yes, I do know "a sort of insanity possesses" even temperance people when they get really engulfed in a bitter fight; that is, it does unless we pray constantly for grace from on high, and for the influences of the Holy Spirit. I myself am *afraid* of getting into a quarrel; and if there is any time in this world when I constantly repeat my little prayer, "Lord, help," it is when I am called on to push forth into a hand-to-hand conflict with the powers of darkness. I am glad to see you admit "the evils arising from the excessive use of alcoholic liquors are very great." Yes, I do think it is a *less* evil to provoke bitter hostility between large classes of community, providing always that at least one of the classes is striving to be guided by Christ Jesus. Surely you would not undertake to say war is *never* right and proper. If the police had succeeded in getting hold of the miscreants who robbed my neighbor, there would doubtless have been "bitter hostility." The outlaws would, perhaps, have killed people right and left before submitting; but surely you would not recommend letting them go *because* of this. We have recently had examples in our great cities of permitting law-breakers to go "scot free;" and, while I think of it, I do believe there *is* a growing evil just now more to be feared than even intemperance; and that is, this disposition to ignore law, or perhaps, rather, to *defy* law. The horrible massacre in China that is startling the world at the present time, it seems to me is only the result of letting law-breakers go unpunished, and may be this country is indirectly responsible as well as the rest of the world. Dear brethren, I do think it behooves every one of us, whether professing Christians or not, to be *very careful* —yes, *exceedingly* careful—about *unnecessarily* provoking strife and bitterness. I am so firmly convinced of this that I feel sorry to see our different political parties having their parades. I feel sorry to see our boys wearing badges. If each parade carried the *American flag*, then I could say most heartily, "God speed the procession;" and if the badges showed forth the American flag, and nothing more, then I would say, "Let us have them. The more the better." No one should ever be *ashamed* to show his colors, no matter where he is, or under what circumstances. Let him boldly show forth the red, white, and blue. Let him proclaim, "I belong to the United States of America;" and let every Christian in like manner be not only willing but ready to let all men know, no matter what crowd he is in, "I belong to Christ Jesus." And, dear brother, let us all remember the words of the Master when he said, "Be ye wise as serpents and harmless as doves." Even when we are in the thickest of whatever fight the defense of our country or the defense of the dear Redeemer's name shall call us, let us always have in our hearts the spirit of that good old hymn I used to hear away back in my childhood days:

Come, Holy Spirit, heavenly Dove,
With all thy quick'ning powers;
Kindle a flame of sacred love
In these cold hearts of ours.

NOTES OF TRAVEL
BY A. I. ROOT.

TRAVELS IN THE WEST, CONTINUED FROM LAST ISSUE.

I found Western Springs, Ill., a very pretty little town, after I got to it. Vaughan's group of greenhouses occupies a side hill fronting the south and also fronting the railway, so one has a very pretty view of the whole plant from the cars. There are about two dozen greenhouses all together, all running east and west. In the center is a packing-shed or potting-house running north and south; and on either side are doors opening into their respective greenhouses. Each house is something like 200 feet long, and perhaps 20 feet wide. All have the long slope on the south except one house. They built one house for a trial on friend Slack's plan, with the short slope to the south. My guide, Mr. Erickson, said they were not yet satisfied that this new plan was, all things considered, an advantage. He admitted the points mentioned by friend Slack, but said for their work there are several things about the idea that are objectionable. Even during July I found all their houses filled with plants, and all thrifty. They get rid of the severe heat by whitewashing the glass; but they do *not* give so much ventilation during a hot day as to let the hot dry air in the middle of the day evaporate the moisture from every thing in the greenhouse. That was an important lesson for me. Our greenhouse has too much ventilation, and not enough shading by the glass. Our curtains for shading the glass are on the inside. Friend Pike told me they should be on the outside by all means; but in that case they would get wet from rain, and, unless very securely fastened, blown off by high winds. I think I shall have to abandon my curtains, and whitewash my glass as other people do, another season. Another thing, the long side sloping to the south is altogether too flat (in our house) for very hot weather. I begin to be impressed by the fact that it is a pretty safe thing to follow the fashion of those who build greenhouses or any thing else on a large scale. Vaughan has also a lot of hot-beds and cold-frames outside. He protects valuable plants in these beds with a covering of burlap. The burlap is placed high enough so as to give the plants plenty of room to grow, and it is secured from being torn off by high winds by having strips of long lath tacked on outside of the burlap. Then he has some very pretty grounds surrounding the greenhouses, where there are plants that bear the hot sun without protection.

I can not tell you of all the beautiful things I saw in that greenhouse; but I must mention a pretty dooryard belonging to one of his men—Mr. Cropp. At one side of the pretty residence is perhaps an eighth of an acre. It is mostly lawn. But around the outside of the enclosure are groups of shrubbery, the tallest plants being next to the fence (or where I supposed there was a fence, for really no fence was visible), then the smaller things make this living wall slope down gradually A rose-bush that captivated me entirely, or, rather, a group of bushes, Mrs Cropp told me was the Crimson Rambler. It is a little bit of rose; but when at its best it is one of the handsomest things in existence. When I got my first glimpse of Dr. Miller's rose-garden I found as a center-piece one of these same Crimson Ramblers. When the buds first open they are of a very deep crimson. As they grow older they become lighter in color, so you have on the same bush a beautiful shading from the deepest crimson down to a light pink, and the bushes just bear *bushels* of roses.

At just about dusk I was on the train again for Chicago; and almost as soon as it was daylight I was out with my wheel inquiring for South Park. This is unlike Lincoln Park, but is, perhaps, just as handsome after another fashion. The thing that captured me entirely was the Grand Boulevard. In my simplicity I did not know there was such a thing in Chicago or anywhere else. I found South Park by wheeling down Michigan Avenue for eight or ten miles, and I pronounced that avenue very fine; but on my way back I stumbled into the Grand Boulevard. I struck it just as the boys and girls (of all ages) were going to the city to work. This boulevard has a beautiful wide street in the middle, for all sorts of vehicles; and on either side of this is one of the finest wheel-paths, if not *the* finest, in the world. No horses or vehicles of any sort are allowed in the wheel-paths. The wheelers go up on one side and down the other, so there is nothing at all in the way. Grand Boulevard may be five miles long, and at the time I struck it there was a perfect stream of wheels all going in one direction, and pretty much all riding at as high a rate of speed as I cared to ride. There were not only hundreds but thousands; and as far as I could see, before and behind, this wheelpath, perhaps 25 feet wide, was occupied by the wheelers. Some years ago an irate person in our town complained to the council because there were so many boys and girls riding wheels everywhere and in everybody's way. He said there were not only strings of them, but regular platoons. Well, the great city of Chicago seems to have recognized that these "platoons" of wheelers of both sexes *need* a good nice place to go and come on, and therefore they have provided it. I wonder if the time is not coming when Uncle Samuel will make similar highways and thoroughfares for those who prefer to travel by the aid of their own muscles rather than by the help of steam, electricity, horse power, or any thing else.

"Oh! I am so glad," I said to myself, while in that throng, "that God has permitted me to live during the age of wheels, and that he has permitted me, during this bright beautiful morning, to be *one* of the flying throng on this boulevard, furnished by the great city of Chicago for its boys and girls." I always like to see a boy and girl just emerging from childhood to boyhood or girlhood, and to manhood and womanhood; I like to notice the poise of the boy as he takes up a man's duties; and (come to think of it) I enjoy *just as well* noticing the poise of the young woman as she begins to recognize she is a woman instead of the child she has been. Well, in the same way I have always enjoyed witnessing the *graceful* poise, let us say, of a young miss who is getting to be skillful in riding her wheel. Such a young miss, with her braided hair floating in the breeze, happened to be riding just in front of me that morning; and somehow or other she *kept* just in front of me for three or four miles. Come to think of it, may be I kept just in the rear of her and her wheel. I wish to be truthful, you know, even in small matters. Well, she was an expert in riding the wheel. She could remove one hand or both from the handle-bars to adjust her dainty cap, and the wheel seemed to be really a part of herself as it made graceful curves in order to go a little faster than some of her fellow-travelers. I love the boys and girls of this country, and I am proud of them; and when I get among them, and feel myself almost one of them, I can hardly tell you how I "hunger and thirst" to see them grow up to be good and pure—not selfish, but doing their part to help this great teeming world along—to help provide not only the wheels and the wheel-paths, but all sorts of comforts—that is, honest, innocent comforts and helps, for all humanity.

I do not like to travel on Sunday; but if traveling *must* be done I very much prefer to do it on my wheel, because in that case I do not ask anybody else to labor for me—no, not even the horses that generally have to work enough week days. The man at the ticket-office said I would have to take the 10-o'clock train, and it would land me at Elyria, 25 miles from home, between 9 and 10 at night. There was an 8:30 train, but to take it I would have to be at the armory, to have my ticket stamped, at 8 o'clock; then I would have to get from there to the Lakeshore Depot (two miles distant) in 30 minutes. This was an easy matter; but my wheel would have to be taken apart and packed in its case, and checked to Medina; and you may know by experience that you can not always get baggage checked when time is limited. But I decided to try hard to make the 8:30 train. Now, when I have something difficult on hand to be done at a certain appointed time, I have prided myself on looking forward and anticipating every thing that might make a hitch in the proceedings. Sometimes here at home we have to shut off our waterworks in order to make repairs, as we do not like to be a minute longer than necessary without protection in case of fire, so we plan to have every thing ready that may possibly be needed, so there will be no stopping at a critical time to hunt for this, that, and the other.

I was at the armory before 8 o'clock, had my ticket in my fingers, and every thing ready to be the first one to get a ticket stamped. The agent was late, and I told him the circumstances. He said, "All right; give us your ticket, and get your twenty-five cents ready, and you can be off in a minute." When I extended to him a dollar, however, he said I would have to make my own change. He said if I did not have the 25 cents he would have to take the next man. Not one in the crowd could change a silver dollar. I ran across the street to a drugstore. They were out of change, but said I could get it at the saloon next door; and here was A. I. Root *again*, rushing from one saloon to another to get a dollar changed. Had I wanted a drink they could have found the change. I kept going on further and further, and then remembered I had left my wheel in that crowd while I was two or three blocks away. Finally I came to a grocery, and got my change. By the time I was back, a great crowd was ahead of me. The agent had my ticket, and I tried to explain that I came in ahead; but I should not have got off had not a good friend given me his place. A good many minutes had gone by, but I jumped on my wheel, and explained to a policeman that I wanted to catch a train. You have all read in novels how the horse seemed to catch the spirit of the rider in some great crisis. Well, can't I believe that that wheel of mine caught the spirit of the rider as much as any horse ever did? The policemen seemed to catch the spirit as well as the wheel. They were very kind, pointed out the way, and said it was all right when I told them I wanted to catch the 8:30 train. My worst trouble was from vehicles coming down side streets. But I soon learned the trick. Sometimes I could follow in the wake of a fast rider. It took me 7 minutes to get from the armory to the Lakeshore Depot, and a policeman said it was two miles. The baggageman happened to be a good-natured fellow, and he helped me all he could. My wheel was pulled apart, packed in the case, the fastenings snapped together, and then, although I showed my ticket, there seemed to be difficulty about deciding what train I belonged on. I went to the right place, but the porter said that was not it—that I would have to go to the gate and inquire. But the gateman said it *was* "it," and I had about one minute to rest before the train started.

I reached Elyria between 5 and 6 o'clock, but had to stop briefly for lunch, as I had had no supper. My wheel, after it was out of the case, seemed to be just as ready for a run as it had been in the morning. I was doing nicely, and should have reached Medina before dark, but I came to a spot where there had been heavy rains, and it was getting too dark to see. Just then somebody came up behind me on a wheel, with an acetylene light. It proved to be a boy who had been in my employ, and he was on his way to Medina; but he wanted to stop at a little town to attend a farmers' institute. He offered to lend me his lamp, but then *he* would have to get through in the dark. If it had not been muddy I should have been all right; but I had to avoid mud-holes, and hunt up dry streaks, without any light. At one point I thought I saw a very nice smooth piece of road Of late I seldom get thrown from my wheel; in fact, I sometimes boast that I have not fallen for a year; but when I struck that light, smooth-*looking* strip, there were some circus performances you may be sure. I could not think what had got into that road; and finally, in spite of all I could do, off I went on my head, into the ditch. When I crawled out I proceeded to investigate, and I found that the farmers had just plowed three or four furrows on each side of the road, and then the rain had stopped them. I had been trying to keep my seat while riding over those furrows in the dark. A little after 9 o'clock, however, struck the new stone road I have told you about, that leads right up to our door; and didn't I appreciate just *then* (*Saturday night*) and *there* a sort of road that does not have mud-holes and slippery spots, even if it *has* been raining hard!

HIGH PRESSURE GARDENING BY A. I. ROOT.

DWARF PROLIFIC GERMAN BLACK SEEDED WAX BEANS.

Some time in the spring D. M. Ferry & Co., of Detroit, sent us a packet of the above sort of wax beans. I do not know why they sent them, for if I am not mistaken this is an old and comparatively well-known variety, although I do not remember that we have ever tested them on our grounds. But it was a surprise to me to find them earlier than the Davis wax beans, more prolific, and very much more crisp and tender. In fact, when we found they were so superior to any other wax beans we had ever got hold of before, I purposely let some of them mature to see how long they would be good without getting tough or stringy. Well, we have been picking them from the same row for nearly if not quite a month; and although they are good-sized beans inside of the pods, the pods are just as crisp and tender as at first. I do not know whether this is an improved variety, or what is the matter; but I do know that 10 cents' worth of seed has furnished beans almost daily for a large family, and we have had some to give away to the neighbors. I never saw any wax beans yield so well, and I never saw any before so excellent in quality, besides being exceedingly early. We shall most assuredly put them in our catalog next season. Of course, the ground was very rich, and there was a good "dust mulch" cultivation. They are certainly an improvement on wax beans in general. Oh, yes! just one thing more. There has never been a rusty pod in the patch.

THE COTTON OR BOLL WORM.

What can we do for corn that has worms in the end of the ear, among the silk, eating and spoiling the ear? I have never seen it mentioned, yet I know it's quite a common trouble. MRS. JULIA S. CARMAN.
Granville, O., July 2, 1900.

The above was submitted to our Experiment Station, Wooster; and, in the absence of the entomologist, Prof. Green writes as follows:

Mr. A. I. Root:—I do not think any thing can be done to prevent it. I have frequently seen this worm on corn. It is known as the boll worm, and in the South infests the cotton as well as the corn.
Wooster, O., July 11, 1900. W. J. GREEN.

In addition to the above, Prof. Webster writes:

The A. I. Root Co.:—The insect is the corn or boll worm, which works in the corn in the North and in the cotton-bolls in the South. They are not likely to do very much damage here in the North, and this largely to corn grown for culinary purposes.
Wooster, O., July 12, 1900. F. M WEBSTER.

While we have the thing in mind, perhaps I might give also the following from a recent number of the *Rural New-Yorker:*

F. B., Albany, Ga.—What remedy can I use on tomato-vines to prevent the worm which bores into the tomato, and at what stage should the remedy be applied?

Ans.—There is no satisfactory method of checking the ravages of this cotton-boll worm, or corn worm, when it works in tomatoes; the only thing that can be done is to hand-pick and destroy the infested fruits. Some think that thorough cultivation of the soil in the fall will kill some of them in their hibernating stage in the soil. Perhaps they might be induced first to attack very early corn planted among the tomatoes. M. V. SLINGERLAND.

Permit me to add also from Bulletin No. 96, of the Ohio Experiment Station, the following:

The insect has been known in Ohio since 1845, and it is not likely to become much more destructive than it is at the present time. It is much more abundant some years than others.

Serious trouble has been reported among those who grow tomatoes in considerable areas, because of the larvæ eating into and destroying the green and ripening fruit. In such cases it is always best not to plant tomatoes close to corn, but, when possible, on ground that has been fall or winter plowed.

I may add, also, on my own hook, that our tomato-book recommends that those who grow tomatoes largely for canning-factories should keep a flock of young turkeys, and train them to go through the tomato fields regularly, for they will "gobble up" all sorts of large green worms that eat both the vine and fruit.

Humbugs and Swindles.

OFFICE OF
VOLUNTARY METEOROLOGICAL OBSERVER,
U. S. WEATHER BUREAU.

Mr. Root:—Here is another humbug ad't for you. You will confer a great favor upon your readers by airing it, as you so often do such things.
Ozark, Ark., July 2, 1900. W. W. ADAMS.

A CHANCE TO MAKE MONEY.

I have berries grapes and peaches a year old, fresh as when picked. I used the California Cold Process. Do not heat or seal the fruit just put it up cold, keeps perfectly fresh and costs almost nothing; can put up a bushel in ten minutes. Last year I sold directions to over 120 families in one week; any one will pay a dollar for directions when he sees the beautiful samples of fruit. As there are many people poor like myself, I consider it my duty to give my experience to such, and feel confident any one can make one or two hundred dollars around home in a few days. I will mail a sample of fruit and full directions to any of your readers for nineteen two cent stamps which is only the actual cost of the samples, postage, etc. Particulars free. MRS M BAIRD 2453 Laclede Ave., St. Louis, Mo.

[I at once sent the stamps, and received the following:]

DEAR FRIEND -Your communication is at hand I enclose recipe, and send by same mail sample of fruit and trust they will benefit you as much as they did me since I first took up the business I also enclose circulars and terms to agents from the California Fruit and Chemical Company, from where you can get your start. I think you can make big money by taking the agency for your section. I have made as much as $20 00 per day. The recipes and salyx are lovely to sell. It is real interesting after you get a little used to it. You can sell a recipe in almost every house. Order your outfit direct from the California Fruit and Chemical Company. All the stock they handle is first class, and they will treat you right in all your dealings with them. You need good samples of different varieties of fruit, as they will aid you wonderfully in taking orders. The company is giving lovely premiums this year. Wishing you all success and assuring you that I will gladly aid you all I can, I remain, Sincerely, MRS. M. BAIRD.
St. Louis, Mo.

[Here is the great secret:]

Price $1.00. Notice—Copyright secured. Any one printing, selling, or giving directions not obtained from us, or in any way conveying the information contained herein, without our consent, will be prosecuted to the full extent of the law.

DIRECTIONS FOR PRESERVING

Fruits, Vegetables, and Liquids, by California Cold Process.—As soon as convenient after picking, take fruit that is sound and clean (wash it if necessary), and pack it in jars or whatever vessel you wish to use. Put it in as closely as you can without injuring the fruit, as the more compact it is packed the less liquid it will take to cover it Then take one two-ounce package Compound Extract of Salyx and fourteen pounds of sugar (coffee C is the best) and dissolve the salyx and sugar in three and a half gallons of hot water. See that it is all perfectly dissolved, then let it get cold, strain through flannel cloth, and pour on enough liquid to cover the fruit. You do not have to heat the fruit; it is simply fresh fruit kept fresh on scientific principles, without mechanical assistance. In the above manner you can keep all kinds of berries, currants, grapes, peaches, pears, and pie-plant, or any thing in the fruit line. Currants and grapes you can put up without

> picking from the stem if you wish; peaches or pears will keep equally well without being halved. Pie-plant when canned is very soft, almost liquid; but when put up cold is as hard and as fresh as when cut in the garden. The sugar makes the fruit sweet enough for table use; and the three and a half gallons of liquid will be sufficient to cover about twelve and a half gallons of fruit, so you see it is the cheapest as well as the best method known, as it does away with the use of cans, sealing-wax, and all the labor connected with canning fruit. One or two grains of salyx per quart will keep milk from souring. CALIFORNIA FRUIT AND CHEMICAL CO.,
> Manufacturers of Compound Extract of Salyx, etc.

Let us now turn back to GLEANINGS for 1893, page 563, July 15. One Bain, of New Concord, Ohio, advertised the same thing, and called it the "United States Salyx Co." Here is what Prof. Wiley said (in 1893) in regard to it:

> "The compound extract of salyx" is the gorgeous title under which the modest salicylic acid is made to masquerade. . . . The value of the two-ounce box, sold at retail for $2.50, is about 3 cts.

You will notice that Bain used to charge $2.50 for the three cents' worth. The Chemical Co., of St. Louis, charge only $1.00 for that much. Well, that is not all. It has been so well settled of late that salicylic acid is really a deleterious drug, if I am not mistaken, there is a law against using it for preserving fruit, milk, or any thing else. In view of this, can not the United States postal authorities stop this "Mrs. Baird" and the Chemical Co. from doing business through the United States mails? I am going to see what I can do about it, and I wish the readers of GLEANINGS would notify the editors of their family papers they do not care to take a paper that consents to boom such pernicious frauds.

Tobacco Column.

CIGARETTE SMOKERS.

The Southern railway system in South Carolina has given a harder blow to the cigarette fiend than all the moral suasion of philanthropists and scientists combined could give. It demands that all employees who now smoke cigarettes must either quit smoking them or lose their positions; and that in the future no one who is a cigarette-smoker will be employed by the company. Railways all over the country refuse to employ men in any capacity of trust who drink. Business men are coming to make the same distinction in all positions that require clear heads and accuracy. When bright young men realize that it isn't an indication of manliness to drink, and smoke cigarettes, and that these habits slam the door on opportunities for engaging in the highest forms of productive labor, they will be quick enough to abandon habits that entail so much misery.—*Farm and Fireside.*

Good for the Southern railways! When the chief of the Weather Bureau took the stand he did he was, to some extent, standing alone; but when the great railways back him up, and even go much further than he did, and manufacturing industries, too, we shall have some pretty wholesome laws in regard to the matter. And, by the way, something comes in here a little queer. The manufacturers of cigarettes have loudly insisted that their goods were made entirely of tobacco, and nothing else, and they challenge our chemists to find any thing else in their composition. The United States Chemist has also said, by the way, that he did not know of any thing more dangerous, to the youth especially, than tobacco *itself*, and I am glad we have so wise a man as the Chemist of the United States. But now to the point: If cigarettes are pure tobacco, and nothing more, why should not the Weather Bureau, the railway companies, etc., rule out pipes and cigars in the same way? Either tobacco itself is exceedingly bad, or else cigarettes contain some deadlier drug than tobacco.

PROGRAM OF THE THIRTY-FIRST ANNUAL CONVENTION OF THE NATIONAL BEE-KEEPERS' ASSOCIATION.

To be Held at Chicago, Illinois, Tuesday, Wednesday, and Thursday, August 28, 29, and 30, 1900; Sessions to be Held in Wellington Hall, 70 No. Clark Street.

TUESDAY EVENING.

Call to order at 7 o'clock.
Song, - - - Dr. C. C. Miller, Marengo, Ill.
"How to Sell Honey," S. A. Niver, Auburn, N. Y.
"Bee-keeping in the City," L. Kreutzinger, Chicago.
Question-box.

WEDNESDAY MORNING.—9:30.

Song.
Invocation.
President's Address, - E. R. Root, Medina, O.
"Queen-Rearing by the Doolittle Method," - - - - - Mrs. H. C. Acklin, St. Paul, Minn.
Question box.

WEDNESDAY AFTERNOON.—1:30.

Song.
"Bee-keepers' Rights and Their Protection by Law," - Herman F. Moore, Park Ridge, Ill.
"Trials of the Commission Man." - - - - - - - - - R. A. Burnett, Chicago, Ill.
Question-box.

WEDNESDAY EVENING.—7:30.

"Breeding for Longer-tongued Bees," by J. M. Rankin, of the Michigan Experiment Station.
"Bee-keepers I have Met and Apiaries I have Visited," by E. R. Root, assisted by Dr. C. C. Miller, Dr. A. B. Mason, E. T. Abbott, and others. Illustrated by a stereopticon.

THURSDAY MORNING.—9.30.

Song.
Invocation.
"Various forms of Disease Among Bees, Cause and Cure," Dr. Wm. R. Howard, Ft. Worth, Tex.
Report of General Manager, - - - - - - - - Hon. Eugene Secor, Forest City, Ia.
"Pure Food Legislation," - - - - - - - - - - Rev. E. T. Abbott, St. Joseph, Mo.
Question-box.

THURSDAY AFTERNOON.—1:30

Song.
"Chemistry of Honey, and How to Detect Its Adulteration," by Thomas Wm. Cowan, Pacific Grove, California.
"How to Ship Honey to Market, and in What Kind of Packages," - Geo. W. York, Chicago, Ill.
Question-box.

THURSDAY EVENING.

"Co-operative Organization Among Bee-keepers," - - - - - - R. C. Aikin, Loveland, Col.
"My Trip Through Wisconsin and Minnesota," W. Z. Hutchinson, Flint, Mich. Illustrated by a stereopticon.
Unfinished business.

One prominent feature of the next convention will be the stereopticon work. Messrs. Root and Hutchinson, with a powerful stereopticon, will project upon the screen some photos they have taken of apiaries they have visited in various portions of the United States. The convention will be held in Wellington Hall, 70 North Clark St., about a block and a half from the office of the *American Bee Journal*, and about five blocks directly north of the Court-house. The hotels at which delegates may secure lodging is the Revere House, about half a block from the convention hall. The rate for lodging will be 50 cts. per night, and the proprietor has assured Mr. York that good beds are provided, but that several will have to occupy the same room. But when any one desires a room with a single bed, the charge will be $2 00 per night. If two men wish to take a single room in that way they can do it, sharing the expense between them. G. A. R. people will have to pay 75 cts. per night for a single bed, so bee-keepers are specially favored at 50 cts. The hotel is almost within a stone's throw of the convention hall, and right near the hall are first-class restaurants where meals can be secured at reasonable rates.

It is a little too early yet to announce what the railroad rates will be during G. A. R. week; but it is assumed that they will be low, probably a cent a mile each way.

Chicago is a central point, and there will undoubtedly be a large attendance; and, considering the attractions, it is earnestly hoped that bee-keepers will turn out in good strong force.

E. R. ROOT, President.

DR. A. B. MASON, Secretary.

SPECIAL NOTICES BY BUSINESS MANAGER

WANTED, COMB AND EXTRACTED HONEY.

Send us full particulars of what you have to offer, and name lowest price on board cars at your station.

PATHFINDER BICYCLES.

We can still furnish these wheels, Ladies' or Gents' models, as described on page 545, July 1. If you have honey or wax to exchange for one of these wheels we can use either.

PREMIUM QUEENS.

The call for these has been so great that we have not been able to get them all mailed as early as we expected. We expect to complete all orders for these by August 4th at the latest.

SECOND-HAND COMB-FOUNDATION MILLS.

We have a number of these mills. Write for description and prices. If you say what size of mill and grade of foundation is wanted we will send you sample of foundation made on the mills we offer.

TOBACCO DUST.

We have just secured a very fine lot of tobacco dust. Although this cost us considerably more than heretofore we furnish it at our usual prices. Send in your order and secure some of this for it is a fine lot; 1 lb., postpaid, 20c; 10 lbs. by express, 25c; 25 lbs., 50c; 100 lbs., $1.50.

OUR PREMIUM LIST.

We are preparing our premium offers for new subscriptions, and shall have something attractive to offer soon. If you want to get an A B C of Bee Culture, fountain pen, watch, camera, or bicycle you should read our offers. Although the list will not be ready before September 1st we shall be pleased to have all who want to solicit subscriptions for GLEANINGS send request *at once* for premium list. If you have in mind some other premium you would like to work for, let us know what it is.

DISPLAY CARDS FOR HONEY.

We have just got out a new card to be placed in stores where honey is sold, wording as follows:

HONEY.

NEW CROP.

Absolutely Pure.

Printed on cardboard, size 6½x8½ inches. We can furnish these in packages of 10 for 10 cts. postpaid. Any number additional 1 cent each. Not less than 10 furnished. Put one of these in each store where your honey is sold and see the result.

Special Notices by A. I. Root.

POTTED STRAWBERRY-PLANTS IN JADOO FIBER.

We have had no complaint that these plants did not arrive fresh and bright, and no complaint that they did not stay so, even when put right in the sun, without wilting. But we have had two complaints to the effect that the plants in jadoo fiber did not take hold and put out runners as well as plants potted in heavy soil. It really ought to be just the other way; therefore we should like to have just as many as possible tell us on a postal whether our potted plants have been a success. Every plant ought to send roots out into the soil at once, produce runners, and be ready to give a good crop next season, especially if planted in the summer months.

IMPROVED WINTER RYE.

Inasmuch as turning under rye is a very important part in our rotation for potato growing, I thought a year ago last fall I would try to get hold of the best strains of rye that could be had. I sent to Henderson, Thorburn, and one other seedsman, for a small quantity of the latest improvement in winter rye. I think I had half a pint of each of the three kinds. Two of them were the Thousandfold and the Excelsior, and the third I have forgotten. I did not get at my experiment until so late the ground froze immediately after sowing the rye. However, it came up all right, and the next spring we gave the rows cultivation so as to get the largest amount of seed possible. Of course, we put these little lots a good deal further apart than ordinarily. All three kinds made a tremendous growth. They had the longest heads and the largest kernels I ever saw in my life for rye; and, strange to tell, nobody could tell one sample from another. They were all superior to any rye we had ever seen, and were all just alike. I do not know whether it was the choice variety or the rich ground and cultivation. Any way, we got a little over half a bushel of large plump grains. A year ago it was sown after early potatoes on about an acre of ground, and gave us about 30 bushels of very nice rye; but the grains are very little if any larger than the average rye in the market. I do not know whether this strain is superior to ordinary rye or not. It seems to stool rather more, but this may be because I gave it more room than usual. The amount of straw was probably over two tons to the acre. Now, if any of the friends want some of this rye they may have it at $1 00 a bushel. I do not know what to call it and I am not positive that it is greatly if any superior to the average winter rye. But it is clean seed, and nice plump grains.

WAR IN CHINA,

but in our large apiary of 500 colonies peace reigns supreme. You should try one of our ***Warranted Superior Italian Honey Queens***, which we will sell for the next 60 days at 50 cts. each. These queens are usually sold at $1.00 each; but this special offer is to introduce one queen in each apiary in this country.

LEININGER BROS.,
Fort Jennings, O.

Italian Queens. Tested, $1 00 each; untested, 50 cents each. Satisfaction guaranteed. **E. W. HAAG, Canton, O.**

ITALIAN BEES and QUEENS FOR SALE

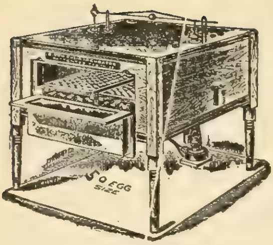
Queens, $1.00; bees, by the pound, $1.00; nuclei, two frames, with queen, $2 00; one frame, $1.50; full colonies, $4.00.

MRS. A. A. SIMPSON, Swarts, Pa.

25 Colonies Italian Bees For Sale Cheap. No disease, and in good condition; also S. C. Brown Leghorn cockerels, $1.00 each.

H. M. MOYER, Shanesville, Pa.

Sharples Cream Separators—Profitable Dairying.

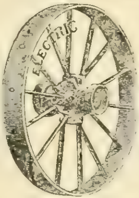


A PERFECT INCUBATOR

That is what every one says of the **New C. Von Culin Incubator** (and Brooder). It has all the latest improvements which have been found of any merit. **Will Hatch Every Hatchable Egg.** Self-regulating, safe, sure. Send for illustrated catalog and price list of Incubators, Brooders, etc., free. Poultryman's Plans and catalog, 10 cts. Address

THE W. T. FALCONER MFG. CO.,
Box M. Jamestown, N. Y.

In writing advertisers, please mention Gleanings.

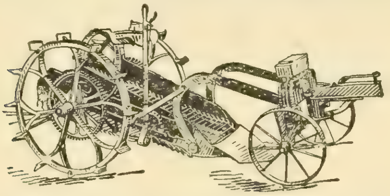


ALL THE ADVANTAGES of a low down wagon, such as ease of loading, saving of heavy lifting, saving the land from cutting up and rutting, are derived from using a set of **Electric Steel Wheels** They convert your old wagon into a low down handy wagon at the lowest possible cost. They are made of steel with either direct or staggered oval steel spokes. They are made in sizes to fit any wagon. A set of these wheels means that you have practically two wagons: A low one for the farm and a high one for the roads. Any height you want, and all wide, non-rutting, easy draft tires. Write at once for catalogue, prices, etc.

Electric Wheel Co., Box 95, Quincy, Ill.

DON'T DIG Potatoes by Hand.

It is a slow and expensive way. The cheapest, quickest, and easiest way is to **USE THE IMPROVED**



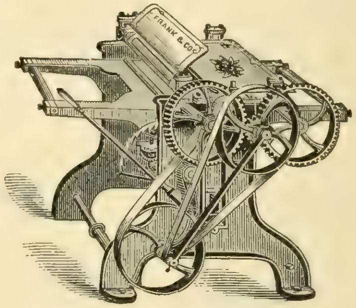
Dowden Potato-digger.

It gets them all, no matter how deep or shallow. Our book explains how. The book is free. Write for it now.
DOWDEN MFG. CO., Box 23, Prairie City, Iowa.

American Poultry... Journal. 25c 1 Yr.'s Trial Subscription 25c
AMERICAN POULTRY JOURNAL,
Room 500—
325 DEARBORN STREET, CHICAGO.

WANTED.—To sell 1000 combs in Simplicity heavy-top-bar wired frames, built from full sheets of fdn. 10, $1.00; 100, $9.50; 300 or over, 9c each. *No foul brood.* Would take a few first-class Belgian hares. Write. H. P. LANGDON, East Constable, N. Y.

1200 FERRETS FOR SALE. Small, medium, and large sized; some trained. **First-class** stock. New price list free
N. A. KNAPP,
Rochester, Lorain County, Ohio.



PLANERS

The above cut shows one of our small Planers, of which we make twelve different styles and sizes. Also large Planers, Band Saws, Buzz Planers, Moulders, Wood Lathes, and all kinds of

WOOD WORKING MACHINERY

Send for Catalogue.

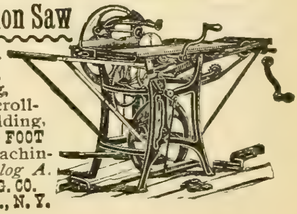
The FRANK MACHINERY CO.,
BUFFALO, N. Y.

DON'T ROB YOUR NEIGHBOR

By buying a poor fence that will let your stock fatten on his crops. The **KITSELMAN FENCE** is a satisfactory one. It insures good sleep and makes good neighbors. Free Catalogue telling how to make 100 Styles at the actual cost of the wire. Write to-day.

KITSELMAN BROTHERS,
Box 51 Ridgeville, Indiana, U. S. A.

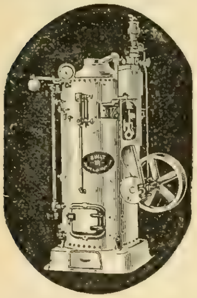
Union Combination Saw



For Ripping, Cross-cutting, Rabbeting, Mitering, Grooving, Gaining, Boring, Scroll-sawing, Edge-moulding, Beading. Full line **FOOT** and **HAND POWER** machinery. *Send for catalog A.*
SENECA FALLS MFG. CO.
44 Water St., Seneca Fs., N. Y.

A FARM POWER

IS A NECESSITY



in the practice of modern agriculture. They're needed for shelling corn, grinding feed, cutting fodder or ensilage, separating cream, wood-sawing, pumping water, and a host of other things.

LEFFEL ENGINES and BOILERS

are clearly the best for the purpose. Either Upright or Horizontal; from 3 h. p. up. Safe, simple, easy to run. They're quick steamers, and need little fuel. Pamphlet with prices on application, stating power wanted.

James Leffel & Co., Box 89, Springfield, Ohio, U.S.A.

In writing, mention Gleanings.

FOR SALE.—My apiary of 120 colonies, with all needed appliances, including about 1800 good extracting combs; bees nearly all in 10-frame Dovetail hives, all in first-class condition, located in the famous basswood belt of Wisconsin; 40 acres of land with good house and barn, and good water. Will be sold with the bees if wanted. Good sugar bush on the place. **W. H. YOUNG, Ono, Wis.**

Queens, Nuclei, and Colonies.

Best of Honey Queens. Special prices to introduce during July, Aug., and Sept. Untested queens, 50c each; $5.50 per doz. Tested, $1.00 each. Nuclei, add 50c per frame to price of queen. Write your wants. Satisfaction guaranteed.

S. P. CULLEY, Higginsville, Mo.

CHAS. ISRAEL & BRO.,
486, 488, & 490 Canal St., Corner Watts St., N. Y.

Honey and Beeswax.

Liberal Advances made on Consignments.
Wholesale Dealers and Commission Merchants.
Established 1875.

Marquette, on Lake Superior,

is one of the most charming summer resorts reached via the Chicago, Milwaukee & St. Paul Railway.

Its healthful location, beautiful scenery, good hotels, and complete immunity from hay fever, make a summer outing at Marquette, Mich., very attractive from the standpoint of health, rest, and comfort.

For a copy of "The Lake Superior Country," containing a description of Marquette and the copper country, address, with four (4) cents in stamps to pay postage, Geo. H. Heafford, General Passenger Agent, Chicago, Ill.

MICROMETER RULES.

We can furnish steel micrometer rules, graduated to hundredths of an inch, one inch in length, for 20 cts.; 2 inches, 30 cts.; 3 inches, 40 cts. These are Starret's steel rules. They are the same thing that we use for measuring the tongues of bees under a magnifier. Or we will furnish a one-inch steel rule and a magnifier in rubber case suitable for the purpose, postpaid, for 35 cts. **THE A. I. ROOT CO., Medina, Ohio.**

Three black and 25 hybrid queens, one year old, 20c each, in August, from fine honey-producing stocks.
B. F. AVERILL, Howardsville, Va.

Twenty-five black and hybrid queens for sale at 20c each. F. H. McFARLAND, Hyde Park, Va.

STANDARD BELGIAN HARES.

One doe, good lacing and ticking, bred to very fine long racy buck, $7.00.
One stylish buck, fine markings and color, $6.00.
One buck, good lacing and ticking, $3.50.
Also a few young does at $3.00.
M. D OFFUTT, Midway, Ky. Box 12.

Location for Bee-keepers.

I have for sale 75,000 acres of land, right in the basswood and white-clover district of Wisconsin. The land is good, and prices are low. Write for prices and terms. **DORN HAGEN,**
Colburn, Chippewa Co., Wis.

BIG HONEY CROP

Means good bees. Many of my colonies have stored 200 lbs. each from red clover. Untested queen, 65 cts.; 2 for $1.00. Tested, $1.00.
G. ROUTZAHN, Menallen, Pa.

The Modern Farmer and Busy Bee.

Emerson Taylor Abbott, Editor.

A live, up-to-date Farm Journal with a General Farm Department, Dairy, Horticulture, Live-stock, Poultry, Bees, Home and General News. The Editor has had practical experience in every department of farm work. To introduce the paper, it will be sent to New subscribers one year for 25c. Sample copies free. Best Advertising Medium in the Central West. Clubbed with *Gleanings* for $1.00.

ADDRESS

Modern Farmer, St. Joseph, Mo.

Wants and Exchange.

Notices will be inserted under this head at one-half our usual rates. You must SAY you want your ad. in this department, or we will not be responsible for any error. You can have the notice as many lines as you please; but all over ten lines will cost you according to our regular rates. We can not be responsible for dissatisfaction arising from these "swaps."

WANTED.—To buy 500 bu. No. 1 dry rice popcorn.
GEO. G. WILLARD, 270 Pearl St., Cleveland, O.

WANTED.—To exchange for anything useful in bee business, tested or untested Italian queens from imported or golden mothers; bred 3¼ miles apart. Also want pure black-and-tan rat pup.
J. M. DAVIS, Spring Hill, Tenn.

WANTED.—To exchange modern firearms for flint-lock guns and pistols of all descriptions.
WM. S. AMMON, 216 Court St., Reading, Pa.

WANTED.—To exchange fine orange-grove and home in Florida for an apiary well located, or real estate. Full particulars asked and given.
M. W. SHEPHERD, Mannville, Putnam Co., Fla.

WANTED.—Would some bee-keeper like my thirty years' experience by helping me a month? I want two men at once.
W. L. COGGSHALL, West Groton, N. Y.

WANTED — Practical bee-keeper for Cuba. Will prove a good position for the right man.
I. J. STRINGHAM, 105 Park Place, New York.

WANTED.—To exchange Italian queen, raised from the best, for beeswax or any thing I can use.
F. H. McFARLAND, Hyde Park, Vt.

H. G. Quirin, the Queen-breeder,

is, as usual, again on hand
with his improved strain of

Golden Italian Queens.

Our largest orders come from old customers, which proves that our queens give satisfaction. We have 12 years' experience breeding queens; no bee-disease in our locality; queens are sent promptly by return mail, with safe delivery guaranteed.

PRICE OF QUEENS AFTER JULY 1:

	1	6	12
Warranted	$ .50	$ 2.75	$ 5 00
Selected, warranted	.75	4.00	7 00
Tested	1.00	5 00	9.00
Select tested	1.50	8.00	
Extra selected tested—the best that money can buy	3.00		

ADDRESS ALL ORDERS TO

H. G. QUIRIN, Parkertown Erie County, Ohio.
Money-order office, Bellevue, O.

MORE STRONG TESTIMONY

in Favor of

Moore's Strain of Italians

On page 436 of GLEANINGS for June 1, 1900, "Uncle Lisha" says:

> "I was talking not long ago with one of the most enterprizing bee-keepers of our State, who has hundreds of colonies. He told how he had bought queens from a number of queen-breeders. Some had been quite worthless, while others were valuable. From one breeder he thought he had the best working bees in his yards. He had introduced several of these queens, which had proved the most industrious bees he had."
>
> "'How about swarming?' I inquired.
>
> "He said he had never if I remember rightly, had a hive of these bees swarm."

I am happy to state that I am the breeder to whom "Uncle Lisha" refers in the above extract, as I have just received a letter from him to that effect. Such disinterested testimony as this is very encouraging to me indeed, and is certainly very convincing. It has taken years of patient labor in selecting and crossing to produce such stock as this.

Warranted queens, 75c each; 6, $4 00; 12, $7.50. Select warranted, $1.00 each; 6, $5.00; 12, $9.00. Strong 3 frame nucleus, with warranted queen, $2.50. Safe arrival and satisfaction guaranteed. Circular free.

I am filling all orders by return mail, and shall probably be able to do so till the close of the season.

J. P. Moore, Lock box 1, Morgan, Pend. Co., Ky.

NEW BOOKLETS.

The Chicago, Milwaukee, & St. Paul is issuing a series of booklets regarding points of interest along its lines; and if you are interested in the western country, or contemplating a trip, write to GEO. H. HEAFFORD, General Passenger Agent, Chicago, Ill., for the special publication desired, enclosing four cents in stamps for postage fo each one.

No. 1.—The Pioneer Limited.
No. 2.—The Land of Bread and Butter.
No. 3.—The Fox Lake Country.
No. 4.—Fishing in the Great North Woods.
No. 5.—The Lake Superior Country.
No. 6.—Cape Nome Gold-diggings.
No. 8.—Summer Days in the Lake Country.
No. 9.—Summer Homes, 1900.
No. 11.—The Game of Skat.
No. 12.—Milwaukee—the Convention City.
No. 13.—A Farm in the Timber Country.
No. 14.—Stock Raising in the Sunshine State.
No. 15.—Hunting and Fishing.

WANTED.—To sell Belgian hares for breeding meat rabbits. Send for prices.
WESLEY C. FOSTER, Boulder, Col.

Our Bees are Busy

now carrying loads and loads of pollen and sweets from the flowers to raise the thousands of new bees for the coming honey crops. We are busy with the orders for Hives, Sections, Foundation, Comb to enable the bees to spread themselves over a surface for rapid work.

Many implements and fixtures to help the people to handle the bees conveniently and with profit.

Drop us a postal card and we will send a catalog of the best and latest Bee hives, etc.; contains also instructions for successful managing of bees for profit.

: : ROOT'S : :

ABC OF BEE CULTURE

If interested in buying groceries, ask for our wholesale list, and it will also be mailed.

We have sold several carloads of Root's hives and supplies, and can make you the best prices for quantity ordered besides a saving of freight in points adjacent to Evansville.

ADDRESS

Vickery Bros., Evansville, Ind.

WHOLESALE GROCERS.

Root's Goods in Kansas.

Carl F. Buck, Augusta, Butler County, Kansas.

D. COOLEY,

Dealer in **BEE-KEEPERS' SUPPLIES,**
KENDALL, MICH.
Root's Goods at Root's Prices. Catalog free.

July Queens! July Prices!

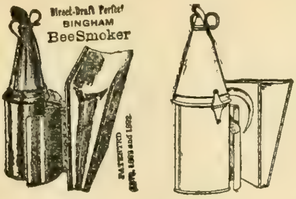
Untested, 50c; $6.00 per dozen. Tested, $1.00 each. From our superior strain of 3-band Italians, the best of honey-gatherers. Large prolific queens, mothers of strong colonies. Send for our price list, and see what others say. Orders filled promptly, and satisfaction guaranteed.

J. W. K. Shaw & Co., Loreauville, La.

Albino Queens. If you want the most prolific queens; if you want the gentlest bees; if you want the best honey-gatherers you ever saw, try my Albino queens by return mail. Untested, 75c; warranted, $1; tested, $1 25.
J. D. GIVENS, Lisbon, Texas.

QUEENS of the Doolittle Case strain. These bees are industrious, prolific, and gentle. Try them. Untested, 50 c ts. each; $5 00 per doz.; select, 75 cts.; young tested, $1.00, or 3 for $2.50; select tested, $2.00.
GEO. VANDE VORD, Daytona, Fla.

Belgian-hare Guide and Directory of Breeders. Illustrated, practical, complete. 25 cts. **Inland Poultry Journal Co., Indianapolis, Ind.**



BINGHAM SMOKER.

DEAR SIR:—Inclosed find $1.75. Please send one brass Smoke-engine. I have one already. It is the best smoker I ever used. Truly yours,
HENRY SCHMIDT, Hutto, Tex.

MADE TO ORDER.

Bingham Brass Smokers

Made of sheet brass, which does not rust or burn out; should last a lifetime. You need one, but they cost 25 cts. more than tin of the same size. The little open cut shows our brass hinge put on the three larger sizes. No wonder Bingham's 4-inch smoke-engine goes without puffing, and does not drop inky drops. The perforated steel fire-grate has 381 holes to air the fuel and support the fire.

Heavy tin smoke engine, 4-inch stove per mail, $1.50; 3½-inch, $1.10; 3-inch, $1.00; 2½-inch, 90c; 2-inch, 65c. Bingham smokers are the originals, and have all the improvements, and have been the standard of excellence for 22 years. Only three larger ones brass.

T. F. Bingham, : : Farwell, Mich.

Marshfield Manufacturing Company.

Our specialty is making SECTIONS, and they are the best in the market. Wisconsin basswood is the right kind for them. We have a full line of **BEE-SUPPLIES.** Write for free illustrated catalog and price list.

Marshfield Mfg. Co., Marshfield, Wis.

NOW READY!

64-page Catalog of Every Thing Bee-keepers Need.

Illustrated and fully described. Especially valuable to beginners for the information it contains Send your address on a postal and get it NOW. Established 1884.

J. M. Jenkins, Wetumpka, Alabama.

SEE THE POINTS!

I have had fifteen years of experience in producing honey and rearing queens; and I am breeding queens from a queen procured last spring from J. F. McIntyre, of Sespe, California. He describes this stock on page 12 of Gleanings for Jan. 1st, as filling the supers when other colonies were actually starving. The drones in my yard are from excellent stock—such as that of J. P. Moore, of Kentucky. I rear queens by the Doolittle method, send them by return mail, and guarantee safe arrival, purity of mating, and satisfaction, at 50 cts. each, in any quantity. Money refunded if queens are not satisfactory. Send for circular.

L. H. ROBEY, Worthington, W. Va.

$800 Given Away to the one who buys the Alderbrook Bee & Poultry Farm, containing 12 acres; finely watered; good buildings, handsomely located on private drive. Cost former owner $2000. Will sell for $1200. Fine location for any number of out-apiaries; fair to good supply of basswood on all the surrounding hills in every direction. Who wants it this fall?
JNO. H. CHASE,
West Eaton, Madison Co., N. Y.

Root's Goods for California.

We have just received a large carload of sections, extractors, smokers, veils, etc., direct from the factory, and are prepared to supply bee-keepers with the same promptly. Do not send a long distance and pay high freights. Write for our prices.

M. R. MADARY, - Fresno, California.

WANTED.—To sell Darling strawberry-plants at 35 cts. per 100, postage paid; ready for immediate delivery. H. FITZ HART, Dalkeith, Fla.

Say! Improve Your Bees.

Did you know that we are rearing golden Italian queens from our famous $100 breeder Victoria? Stock unsurpassed for beauty, gentleness, and honey-gathering. Queens very prolific; bees do not crowd brood-nest with honey; swarm very little, and enter supers readily. Also 3-banded queens from our fine breeders, Jewell and Beauty. Stock hardiest, gentlest, and best strain in the world. Prices, either race for the rest of the year, unt., 75c; 6 for $4.25; select warranted, 25c extra. Tested, $1.25. Holy Lands same price. Special discount in quantities. Circular free.

O. P. HYDE & SON, Hutto, Texas.

We give free sel. test. queen for every $10, and a fine breeder for every $25 worth of orders at circular prices.

REMOVED!

EARLY QUEENS. W. H. Laws has removed his entire queen-rearing apiaries to Round Rock, Texas, where he will be better fitted than ever to fill orders for the LAWS strain of FAULTLESS 5-BANDED bees the coming season. BREEDING QUEENS always on hand. Price $2.50 each. I am also breeding the leather-colored stock from imported mothers. Tested queens, either strain, $1.00; 6 for $5.00; untested, 75c; 6 for $4.00. Queens ready in season.

W. H. LAWS, Round Rock, Texas.

Queens.

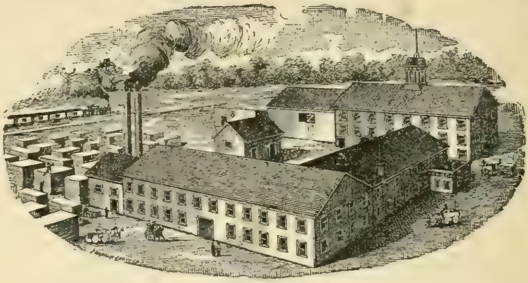
Use No Smoke. It is not necessary with the **Sweetheart** strain of bees. A postal card or letter will bring my descriptive circular and price list of these **gentle hustlers** and other strains. I am booking orders for them now, which will be filled in the order received. Don't delay.

A. J. WRIGHT,
Bradford, Steuben Co., N. Y.

BEE-SUPPLIES!

We have the best-equipped factory in the West. Capacity, one carload a day; and carry the largest stock and greatest variety of every thing needed in the apiary, assuring BEST goods at the LOWEST prices, and prompt shipment. We want every bee-keeper to have our FREE ILLUSTRATED CATALOG, and read description of Alternating Hives, Ferguson Supers, etc. *Write at once for a catalog.*

We also manufacture TANKS of either wood or galvanized steel, all sizes, any form, and for all purposes. Price list free.



KRETCHMER MFG. CO., Red Oak, Iowa.

$10.00 REWARD

To the party who sends me the most money for bees and queens between April 1 and Nov. 1, 1900.

HIGH-GRADE STOCK
BY RETURN MAIL
MY SPECIALTY.

One untested queen, 75c; 6 for $4.25; 12 for $8.00.

One tested queen, $1.25; 6 for $6.50; 12 for $12.00.

One 1-frame nucleus, $1.00; 6 for $5.50; 12 for $10.00.

One 1-frame nucleus and queen, $1.75; 6 for $9.00; 12 for $17.00.

Two, 3, and 4 frame nuclei, 65c per frame to above prices for extra frames wanted.

For each dozen queens or nuclei ordered at above rates I will mail in August a **SELECT TESTED QUEEN.**

ROOT'S GOODS at ROOT'S PRICES,

Plus carload rate freight.

Bees, Honey, and Beeswax bought and sold.

W. O. VICTOR,
Wharton, Texas.

Don't Buy
Supplies

Until you see my 40th annual catalog. A full line of hives and fixtures best adapted to our New England climate. Also best brands of **Comb Foundation and Section-boxes.** I have also made arrangements to keep quite a general stock of

A. I. Root Co.'s Goods at Their Prices.

Parties desiring these goods can get them of me, and **Save Freight Charges.** Bees, Queens, and Nucleus Colonies from the **very best strains** in America. A 40-page illustrated catalog free. Address

W. W. Cary,
Lyonsville, Mass.

I. J. Stringham, 105 Park Place, New York,

will gladly mail you an illustrated catalog of Apiarian Supplies upon request. Among the seasonable articles are Honey-cans, Shipping-cases, and Cartons.

Untested Italian Queens, 60 cents each; 1 dozen, $6.00. Tested Italian Queens, $1.00.

Apiaries, Glen Cove, Long Island.

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Honey Column.

CITY MARKETS.

New York.—As to comb honey, our market is absolutely bare, and we are having an unusually good demand for honey of all grades. Fancy white sells readily at 15, and some exceptionally fine lots would bring 16; No. 1 at from 13@14, and amber at 12. No demand as yet for dark comb honey. As to extracted, the market remains quiet and uncertain, 7@7½ being the top price obtainable for white, and 6@6½ for light amber. Southern honey sells at from 60@70c per gal., according to quality. Beeswax remains firm, and in good demand at 28.

Hildreth & Segelken,
Aug. 8. 120, 122 West Broadway, New York.

Boston.—It is too early in the season, and too warm for any inquiry on honey, so prices named are only nominal. Fancy 1-lb. cartons, 17; A No. 1, 15@16; No. 1, 15; No. 2, 12@13; extracted honey from 7½@8½, as to quality. Prospects for crop in this vicinity seem to be for a light one.

Blake, Scott & Lee,
Aug. 8. 31 & 33 Commercial St., Boston, Mass.

Philadelphia.—Not enough honey has arrived yet to fix price for either comb or extracted, some few sales being made of fancy comb at 15@16; extracted, at 7@8. Beeswax, 26. We are producers of honey—do not handle on commission.

Wm. A. Selser,
Aug. 8. 10 Vine St., Philadelphia, Pa.

Schenectady.—The outlook for a crop of honey is not encouraging in this section. But very little clover has been gathered; and unless we have rain soon the same will be true of buckwheat. No new on market yet, and no demand.

Chas. McCulloch,
Aug. 7. Schenectady, N. Y.

Chicago.—Fancy white comb honey is selling at 15 cents, with No. 1 grades bringing 14@15. There is not much demand at present, and will not be until this hot spell shall pass. Very few amber grades on the market, and yet what there is does not sell. Extracted white, 7@7½; amber, 6½@6¾; dark, 6@6½. Beeswax, 28.

R. A. Burnett & Co.,
Aug. 7. 163 S. Water St., Chicago, Ill.

Cincinnati.—The demand for extracted honey is slow, while the shipments are many. I quote as follows: White clover, 8@8½; Southern and ambers, 6½@7. Comb honey sells as fast as it arrives, at the following prices: Fancy, 16@16½; No. 1, 15. Beeswax, good demand at 25.

C. H. W. Weber,
Successor to Chas. F. Muth & Son,
Aug. 8. 2146-48 Central Ave., Cincinnati, O.

Albany.—Hardly any honey in market, and no demand. We think demand will start in by Sep. 1, and shipments by middle of August.

MacDougal & Co.,
Successors to Chas. McCulloch & Co.,
Aug. 7. Albany, N. Y.

New York.—Comb and extracted honey market dull and featureless; prices nominal; market for beeswax is fair, with supply limited. Quote 28@29.

Chas. Israel & Bro.
Aug. 8. 486 Canal St.

Wanted.—We shall be in the market for all grades of comb honey, either in local or car lots after September 1st, and producers will do well to correspond with us before marketing their crops.

Evans & Turner,
Fourth & Town Sts., Columbus, O.

Wanted, Honey and Beeswax.—We have a tremendous and growing trade in this line, and should like to hear from all having such goods to sell in any part of the country, with quantity, description, and lowest cash price.

Thos. C. Stanley & Son, Fairfield, Ill.

For Sale.—Basswood honey, both comb and extracted. Write for prices, stating amount wanted.

Ed. Wilkinson, Wilton, Wis.

Wanted.—Comb and extracted honey. Will buy your honey, no matter what quantity. Mail sample with your price expected, delivered Cincinnati. I pay cash on delivery.

C. H. W. Weber, Cincinnati, Ohio.

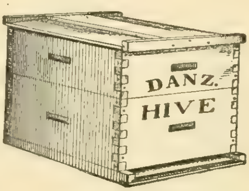
Wanted.—Comb and extracted honey. State price, kind, and quantity.

R. A. Burnett & Co.,
163 South Water St., Chicago, Ill.

Wanted.—Quantity lots of comb and extracted honey.

B. Walker, Evart, Mich.

FACTS About Bees.
REVISED EDITION.
How to get
GILT-EDGED HONEY
Send 2c stamp to
THE A. I. ROOT CO.,
Medina, Ohio,
or F. Danzenbaker,
Box 66, Washington, D. C.



Best Queens at Fair Prices.

While I can not compete with everybody in price, I am open to the world as to quality. Quality is the true test of prices. The fact that about nine out of ten of my customers who have had time to do so have sent from one to seven orders for three or more queens each after having received first ones, is pretty conclusive evidence that the "Superior-Doolittle" cross fills the bill.

75 cts. each; $2 00 for 3; $7.50 per doz. *All selected*, and all orders filled same day received.

JEWELL TAYLOR, Forestville, Minn.
Money-order Office, Spring Valley.

CHAS. ISRAEL & BROS.,
486, 488, 490 Canal St.,
Corner Watt Street, N. Y.

HONEY & BEESWAX.

Liberal Advances made on Consignments.
Wholesale Dealers and Commission Merchants.
Established 1875.

Hives Full of Honey

such a poor year as this speaks, well for stock. We are breeding queens from such colonies, from queens with records *this year* and others. Untested queens, 50 cts. each; after Sept. 1, 35 cts. each. Tested queens, $1.00 each; after Sept. 1, 75 cts. each. IT WILL PAY YOU TO REQUEEN YOUR APIARIES AT THESE PRICES. Queens exchanged.

S. P. CULLEY, Higginsville, Mo.

Wm. A. Selser, Honey Expert,

Office of the A. I. Root Company.

10 Vine St., Philadelphia, Pa.

Headquarters for Bee-keepers' Supplies in Chicago.

DON'T FORGET THAT

When you are needing anything for the care of your bees or honey.

Shipping-cases and 60-lb. Tin Cans.

We have a good supply of SECOND-HAND 5-gallon (60-lb.) cans, which are practically as good as new. Prices while they last—10 boxes of two cans each, 50 cts. per box ; 20 boxes or over, 45 cts. each ; 100 boxes, 40 cts. each. New cans are almost twice these prices.

Send for FREE CATALOG and sample copy of the weekly American Bee Journal.

Address

GEORGE W. YORK & CO., 118 Michigan St.,
CHICAGO, ILLINOIS.

By Return Mail.

I think I have said enough regarding the qualities of the Superior Stock queens that I am offering for sale, so that the readers of GLEANINGS must know all about them that it is possible to learn from an advertisement. There is no question as to their superiority ; but, to some, there may be a question of how soon they can get them after sending in their order. To such I would say, "*By return mail.*" During the two years that I have sold these queens, this is the first time that I have been able to fill orders promptly ; and this has come about because the breeder has been putting forth extra efforts, and starting extra nuclei, that he might catch up with orders. He is now able to supply me 50 queens a week if necessary ; and no one need hesitate in ordering, thinking that he may have to wait weeks for his queen. It will be sent by return mail—not some time next week, but *right off.*

The price of queens is $1.50 each, but they are sold under the guarantees given in former ads. The only deviation from this price is that I will send one queen and the *Review* one year for only $2.00.

W. Z. HUTCHINSON, Flint, Mich.

GLEANINGS IN BEE CULTURE
A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS
ILLUSTRATED SEMI-MONTHLY
Published by THE A. I. ROOT CO.
$1.00 PER YEAR MEDINA, OHIO.

VOL. XXVIII. AUG. 15, 1900. No. 16.

STRAY STRAWS FROM DR C. C. MILLER

ON to Chicago, Aug. 28 !

THE GREAT PAINS C. Russel seems to take to rear good queens, p. 611, deserves commendation. The day may come when every intelligent producer of honey will find he can not afford to rear queens without taking just such care.

I'VE TRIED Somerfield's plan of penning in nuclei with leaves to make them stay. More dead bees than desirable sometimes ; still, I like the plan. It seems to work very well to free them in 24 hours ; but a good feature of the plan is that, if you forget to free them, they will free themselves.

YOU ARE RIGHT, Mr. Editor, in thinking my way of wetting sections will not work with any thing but square sections, unless they are packed exactly right. But I *think* it would still be a gain to use my way, after repacking straight. You say, "I should think there would be some grooves of some sections that you would miss." Well, you would think wrong. The boiling water runs clear through, and I never knew a groove to be missed.

THAT MAN in the picture, p. 610, ought to know better than to try to extract honey when it's so cool he can wear a coat. [In taking the picture to which you refer, I forgot to tell the man to take off his coat and assume the attitude of hard work. There is a fine art in posing a subject, and the more I study amateur photography the more I see how I sometimes miss it. The average subject seems to think he must look at the camera.—ED.]

AFTER trying the Jones plan of clipping for a time (holding the queen by the legs), I have fallen back into my old plan as easier because of long practice in it. And that old plan is precisely the one given by the editor, p. 606. [Very much depends on what we are used to; but I think the average beginner—yes, the average bee-keeper—with his clumsy and perhaps nervous fingers will do less harm to the queen to hold her by the shoulders during the act of clipping than if he held her by the legs, which are liable to be pulled loose.—ED.]

INSTEAD of running honey directly from the extractor, it is becoming more and more the practice to run it into square tin cans, p. 621. Is it not still better practice to run it first into tanks ? [I think you must misunderstand me. I did not mean to convey the impression that it was getting to be more and more the practice to run honey directly from the extractor into the square cans, but that it was getting to be more and more the practice to use square cans instead of barrels for *marketing and shipping*.—ED.]

"NEVER allow horses to enter the apiary, for the bees will rush at them and sometimes sting them to death, even at night," is advice given p. 603. Safe advice. But it's only fair to say that at my Wilson apiary for years no serious consequence has followed allowing ten or more horses and twice as many cows to be within 8 feet of the hives, with only a wire fence between, and sometimes the horses are right in the apiary. When one gets stung, it races away, rubs against a tree, then comes back again. Yet I know of a colt being stung to death on a farm where only two or three colonies of bees were kept.

THE EDITOR tells, p. 620, about hiving a stubborn swarm five times, and upon putting them in a new location with brood they stayed. The question is : Did they stay because of the new location, or because of the brood ? [I should have explained that, when I hived this swarm five times, it was during my early experience with bees, for I should now know that, if it came off the second time, it would be advisable to hive it somewhere else. Referring to your question, I do not know that I can say definitely that either the brood or change of location induced the bees to stay at home ; but I should assume that both had an influence, although it is probable that the latter had more to do with it.—ED.]

"WE HAVE had queens get the cramps many and many a time, especially in caging for mailing," says the editor in reply to my statement that I never had a case of the kind. Of course, you've handled more queens than I, still I've clipped them by the hundred, yes, by the thousand, and it always has been a puzzle to me that people should say that playing dead was so common. Well, since writing that statement I've had a genuine case of playing 'possum. After being clipped, a queen lay still, wiggling one foot just a little. I thought I had hurt her, and put her back in the hive. Next time I looked she was laying all right. [Yes, it is probably true that we have handled more queens than you have in caging for the purpose of mailing. I do not know that I ever had a queen get the cramps while I was clipping; but I have often had them cramp while I was putting them through the opening into the cage.—ED.]

DOOLITTLE says, p. 617, that Carniolans do not differ in looks from black bees. I said that once, and a man mailed me a cage of bees he called Carniolans that were distinctly different from blacks — no yellow on them, but narrow white bands. [The real pure Carniolans that I have seen look slightly different from the typical black bee. At one time it was claimed that the abdomens of the former were of a steel blue, but this was a mistake. Carniolans look about like blacks, except that the fuzz-rings between the segments, or scales, are of a whiter color. The bees themselves are a trifle larger, or appear to be so. Some so-called Carniolans look very much like black bees—act like them in tumbling off the combs in general confusion as they are picked out of the hive. But we *have* had colonies of them in our apiary that behaved as quietly as Italians, and were just as gentle. As both races of bees came from Germany, it may be assumed that there are many crosses between the two. It is very difficult, therefore, to get pure Carniolans. —ED.]

CHALON FOWLS must take in hand Doolittle and Somnambulist. Doolittle says in *American Bee-keeper*, "My customers, for the past five years, have all called for the granulated article, nearly all of them preferring to use it in that way;" and Somnambulist says in *Progressive*, "Our home customers have reached the point where they will have naught but granulated honey." [Mr. Fowls had pretty nearly whipped me out of my advocacy of granulated honey for the general market, and I had almost come to the conclusion that he was right and I wrong. It is no little pleasure to me to see you bring such authorities as Doolittle and Somnambulist, to prove that I was at least in part right. Let's see. We have the Muths, R. C. Aikin, G. M. Doolittle, and Somnambulist, all of whom aver that candied honey is a legitimate product of the apiary, and that its consumption on the part of the general public should be encouraged. We consider that the products of the hive are wax, extracted honey, and comb honey; and the general public has come to recognize honey in the liquid form. Now, why can't we show this dear public that candied honey is just as much a legitimate product of the hive as any of the others mentioned? If it could be convinced that such honey was pure, it would demand it, oftentimes, in preference to the other. —ED.]

THE BIG CONVENTION at Chicago, August 28—30, will be up to high-water mark or higher. Discussions are the life of a convention, and there's to be plenty of time for them. A very important part of a convention is the arrangements for eating and sleeping with reference to allowing a good chance for visiting between sessions. Editor York is a hustler, and, having these arrangements in hand, he knows about what is wanted. If the Chicago stock of lightning doesn't give out, I'm sure we'll enjoy the stereopticon pictures. [Every thing is being done that can be done to make the Chicago convention a big success in every way. The stereopticon feature will be, perhaps, the most prominent. Not only the faces of bee-keepers and views of typical apiaries will be thrown on the screen, but much that has never been shown in the journals will be illustrated. I am having made to order something like 200 lantern-slides *for the special use of this convention.* I have just been trying my stereopticon, and I find, as was claimed by the manufacturers, that it is the equal of any single lantern made in the United States. —ED.]

THE GENERAL BELIEF has been, I think, that bees preferred to build drone comb as store comb because it took less wax to store a given amount of honey. That belief must be given up, according to Prof. Gillette's observations, which showed that it took just a fourth more wax for drone than worker comb when each was .9 of an inch thick. [Prof. Gillett's observation proves another thing; namely, that it does not follow that comb built entirely by the bees will have less of "gob" than comb built off from thin or extra thin foundation. The former will necessarily be worker; the latter, probably drone; and, if so, there will be as large a chunk of wax (gob) to the pound of comb honey eaten in the one case as in the other. If it is an advantage, therefore, to use foundation at all, in that it induces the bees to build comb faster —that is, to do more work in the sections — it would seem that it would be false economy to give the bees a narrow starter, on the mistaken assumption that the resultant comb would have the less of wax to chew in the eating. This observation of Prof. Gillette was confirmed in our own experience in our own apiary.—ED.]

LET ME SEE, Mr. Editor, if I can explain that point you say you don't get, p. 601. Advocates of square sections may talk like this: "Yes, bees build deeper than wide; but if you give them a section of just the proportion they would naturally build the comb, that is, a tall section, they will not build to the bottom. Now cut the section enough shorter to make it square, and they will do better at fastening to the bottom. In other words, their tendency to build deep must be utilized, not to get taller sections, but to get the square ones fastened to the bottom." But I prefer bottom starters. [I think I understand your point. You say you use bottom starters, and that you would use them any way. Now, then, if the bees prefer to build their comb deeper than wide, is it not a wise policy on the part of the bee-keeper to give them a section that will cater to their inclinations? in other words, so long as it is practicable, is it not wise to follow nature by giving them a tall section, and a bottom starter, and thus catering to their natural instincts, and at the same time inviting them to make a bottom attachment? Are you sure that, by getting the section enough shorter to make it square, the bees will make a better fastening at the bottom? I do not see that the conclusion necessarily follows.—Ed.]

PICKINGS
FROM OUR NEIGHBORS' FIELDS.
BY STENOG.

From brazen skies the sun pours down
  A flood of torrid heat;
All nature pants beneath the scourge,
  The bees get little sweet.

AMERICAN BEE JOURNAL.

On page 370 Prof. Cook says the true stomach of the bee is larger than the honey-stomach. Mr. Hasty says this is true when both are empty; but the fact that the latter, when full, is more than half the weight of an unloaded bee makes it impossible that the real stomach should be larger than the honey-sac.

◆

In the issue for July 26 F. Greiner has an article on crimson clover. He ranks it as one of the most desirable honey-plants in existence. He has counted on it 20 bees to the square foot, of which three out of four were gathering honey. He thinks 25 acres would keep 100 colonies busy, and says he could afford to pay 75 cents to $1.00 for every acre sown within a mile of his place.

◆

C. P. Dadant and daughter stopped at Dr. Mason's in Toledo while on their way to Paris. I have forgotten hitherto to congratulate the bee-keepers of the United States on having such a representative as Mr. Dadant at the coming bee-keepers' congress in Paris. Not only in his ability to speak French, but in every way, he is just the man. Mr. Dadant left his old home in France in 1863, and, I believe, has not seen it since then till now. We can well imagine his feelings on again treading whát must be to him sacred ground, and in meeting as many of the "boys" as may be still living.

◆

In the issue for July 19 Mr. J. O. Grimsley makes a vigorous defense of the National Queen-breeders' Union, and it strikes me he is about right. It seems Mr. York was rather opposed to such a union, and said: "Suppose the supply-dealers should form a union, telling how honest they are." But Mr. Grimsley shows that the object of the association is to sift out incompetent and irresponsible breeders of queens, and to let purchasers know just what they are getting, and to enable them to get what they pay for. He adds: "It wants to benefit all, and is exactly the same class of organization as the National Bee-keepers' Association, except that it is composed exclusively of queen-breeders, and the members must be received by a vote."

◆

Mr. Hasty says, "After a long period of valetudinarianism, intentionally consuming much sweet, and with my prejudice (if I had any) in favor of honey, you will see me eating sugar as a horse eats oats, and not much honey." If Mr. Hasty had said he eats sugar as a horse does, his case would seem hopeless. For some time he has figured as the champion honey-eater; and the cause of this sudden change in taste is not evident. Probably it is not permanent, and can be accounted for by the fact that "a cook is never hungry." May be the sight of honey constantly before a person will cause him to tire of it; but still we see sugar a hundred times where we see honey once. Mr. Hasty objects to tracing evolution so far back as to say that the apple was developed from the wild rose. He admits that both, several millions of years ago, may have come from one common parent. More likely, however, that "common parent" was Mother Earth.

◆

Dr. Miller says he has seen sweet clover growing in places where the grass was eaten away all around it, but he has seen more places where cows had eaten the sweet clover close to the ground. He considers it a matter of education. Till recently I had lost considerable sleep over the question whether elephants would eat sweet clover or not. A few days ago a rusty specimen of that tribe was anchored in front of this establishment. Some boys gathered large wads of sweet clover, which grows in profusion everywhere here, and the huge animal ate it with as much avidity as a cow does green cornstalks. It certainly was a sight to see that clover twisted in the trunk and then stuffed in the mouth. If an elephant's trunk does not show the intelligence of its Creator, I don't know what does.

In speaking of sweet clover, and the prejudice of some farmers against it, Mr. C. W. Snyder, of Utah, says, "I had much opposition when I planted my first seed, but I planted the seed just the same. Now nearly all the farmers see the value of it." Strange that farmers will smile over acres of ragweed and prickly lettuce, and storm at the sight of sweet clover.

BRITISH BEE JOURNAL.

In Western Australia there is a law requiring every person who may have in his possession or under his care any colony, hive, or swarm of bees affected with foul brood or other contagious disease to report the same to the Department of Agriculture, and take such steps for its eradication as the department may direct. The Governor is empowered to appoint one or more experts to carry the law into effect.

* * *

In 1897 there were 641,127 colonies of bees in Hungary, of which 197,382 occupied hives with movable frames, and 443,745 were in straw hives. The honey was estimated at 6,800,000 lbs., and wax 3,000,000 lbs.

* * *

The editor well says: "There can be no reasonable objection to individual bee-keepers making hives for their own use to whatever style, size, or shape they may prefer; but it forms part of our mission as editors to guide readers into the methods of management proved by experience to be best. . . While allowing perfect freedom for all so far as regards personal preferences, we strongly deprecate any general interference with the size or measurement of the standard frame."

* * *

In the *Journal of the Board of Agriculture* for June we learn that 48 million pounds of honey was imported into Hamburg, Germany, in 1899. More than half of it came from Chili and Peru. The light crop in this country last summer caused an increase in price there. Complaint is continually made in Germany of increasing competition of artificial honey, and measures are being taken by the honey-producers of Germany to obtain prohibition of imitations. By the way, why is the manufacture of an injurious adulterant permitted in this country, especially when not an ounce of it ever reaches the consumer under its proper name? Glucose is injurious to human health, and every pound of it made represents so much swindle at the expense of the one who last buys it.

* * *

In speaking of foul brood in straw skeps, one writer makes the following observations:

> Foul brood and skeps are the source of all the mischief in my neighborhood; in fact, foul old skeps have infected my own apiary. Skeps rotten with age, standing on old floor-boards never cleansed or disinfected, the disease gets in, the owner is ignorant, and knows nothing of foul brood; finally his diseased hives are robbed out, and the disease conveyed to stocks kept, as mine are, under sanitary conditions. In skeps the disease can not be detected in its early stages, as in frame hives; the stock perhaps gets weak, and either dies or is robbed out, or may be the owner "takes it" for the sake of the honey it may contain, exposing the comb for other stocks to clean up. Such a case came under my notice last autumn, and now the owner's one-bar frame hive is affected, and in all probability his three skeps as well. I fear foul brood is going to commit great ravages in the East Riding of Yorkshire. If the skeps in my neighborhood could be all destroyed, there might be a chance of stamping out foul brood, but never so long as they exist.

* * *

Foul-broody frames of foundation that have been fumigated with sulphur, and afterward sprayed with a napthol-beta solution, will be quite safe for using again.

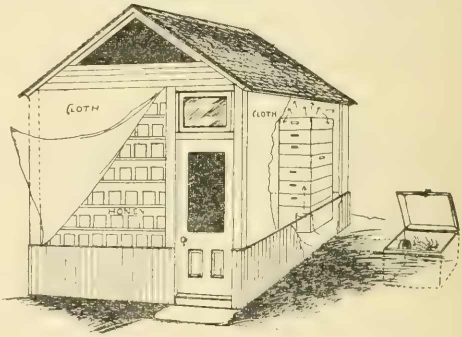
GENERAL CORRESPONDENCE

PROCESS FOR BLEACHING COMB HONEY.

By the Man who First Introduced the Bleaching Process.

BY L. J. CROMBIE.

Build a bleaching-house by placing posts 2×4 or 4×4 in the ground, 5 feet apart on all sides, making it 10 feet square and 7 feet high. Put on plates and roof. Build up around the bottom with lumber 2 feet high from the ground, making it bee-tight. Put in your shelves between the posts, making them 4 inches wide, and placing them 6 inches apart, one above the other. Place these shelves entirely around your bleaching-house, then cover the outside, from the lumber at the bottom to the plate, with the lightest house-lining. Seal overhead with cloth or lumber. Leave the space between the sealing and roof open so as to keep your house as cool as possible.

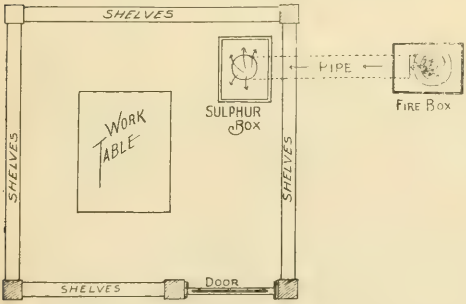


Place a screen-door in one corner, as seen in the sketch. Locate a work table, 3×6, in the center of your bleaching-house, for cleaning and packing on.

The best way to build a sulphuring-box is to take a stovepipe, 8 feet long, with an elbow at one end. Place the pipe under ground about 8 inches deep, letting the elbow come up above ground in one corner of your bleaching-house. For the outside end of the pipe take an old coal-oil can and cut a hole in the side sufficiently large to admit the stovepipe. Cut about half of the top of the can out square to allow you to put in your sulphur and for draft; then make a box just the size of a super, but four times deeper. Place the box over the elbow on the ground, in the corner of your bleaching-house, as seen in the sketch.

We are now ready for business. When you take off full supers of honey from the hives, carry them into your bleaching-house and place on the sulphuring-box; build up ten or twelve high. Put a heaping tablespoonful of sulphur in an old tin plate or pan, and place it in the oil can and start it to burning. In this way you get the full benefit of your sulphur, as it enters the super in every row of sections and passes from super to super. Some may ask why I have the sulphur so far from the honey. Why not put it directly over it? The reason is, I have tried that, and the consequence was I had a lot of comb honey that became hot enough to begin to settle in the sections, and also turned them dark at the bottom of the sections. To get the best results, keep your honey as cool as possible when sulphuring. After the sulphur that you have put in your box has burned out, turn your supers upside down on your table; take out the honey, and clean; and as you clean, place on the shelves side by side, the honey facing the outside. Let it remain about 24 hours in daylight, then reverse, putting the other side of the section out to the light. When my shelves are pretty well filled I go over it every morning before the sun is up, reverse, and pick out what is sufficiently white. When the sun is shining it all looks white when it is not.

Pack as you take from the shelves. Care should be taken that the sun does not shine too hot on your bleaching-house during a hot day, or you will have a lot of honey settling down in the sections and dropping out. When the weather is cool the sun does no harm. In hot weather I use an awning on the sides that the sun shines on, about four feet wide, sufficient to break the heat of the sun from the shelves. It is not the heat of the sun that you want. It is the sulphuring and the light that do the work. After comb honey has remained on the shelves three days, and is not sufficiently white, place in supers and sulphur, and place on the shelves again. You will find that you can bleach the darkest comb. Any foreign matter that is on the comb will not bleach. I commenced the bleaching of comb honey several years ago, and there are but five others in the State, up to the present time, who have adopted it. They are B. B. Higgins, A. E. White, E. A. White, D. A. Higgins, and a man by the name of Coons.



Fallbrook, Cal., June 21.

[I must confess I was not aware that this question of bleaching soiled faces of sections had been made the subject of so much careful study and inquiry; indeed, our correspondent seems to have brought it down to a science. Such a building as is described can be very cheaply constructed, and I should imagine it would almost pay for itself in one season's use if the crop were large.

I wish our friend Mr. Crombie would tell us what classes of soiled sections he can bleach. In the absence of any statement to the contrary I take it he can bleach the cappings of any comb honey where the stain is on the outside; but when particles of propolis or dirt go clear through the cappings, no improvement can be made.

This matter of bleaching comb honey is a very important subject, and I should be glad to hear from any of our other subscribers as to what success they have been able to attain; and especially should I like to hear further from Mr. Crombie.—Ed.]

BELGIAN HARES.

Their Life History; the Various Species of Domesticated Rabbits; the Difference between a Hare and a Rabbit; the Variation in Species.

BY PROF. A. J. COOK.

Dear Mr. Editor:—I most gladly comply with your request to write up the new and important industry of Belgian-hare production. As my fitness for this duty might be questioned, I will say that previous experience with bee, chicken, and cattle breeding makes me a quick student of this new line, which is quite kindred to the above. It is an article of my faith that no true patriot will fail to become conversant with all the important industries of his section. Whether I grow citrus fruit or not, it is my duty and privilege, as a citizen of this glorious Southern California southland, to study into the delights of orange and lemon growing. Los Angeles County—my own county—has become not only the center of Belgian-hare production in Southern California, but to-day leads the world in the matter of breeding the Belgian hare. I have read several works on the industry, have visited the hutches of skillful breeders, and believe I could stand a first-class examination to-day on this subject.

These little mammals, "the Belgian hares," belong to the order *Rodentia* or *Glires*. The first word comes from the Latin word meaning to gnaw; the second, from the same language, is the word for "dormouse." The word *rodent* is especially applicable to this order of mammalia, as they are pre-eminently the gnawers of this class of animals. I hardly need say that the mice, rats, squirrels, beavers, etc., belong to this order. They all have the chisel-shaped front teeth or incisors, usually two above and two below, a vacant space back of these, as they have no canine teeth, and very perfect grinders for molars, three above and two below on each side. It is an interesting fact that the incisors are constantly growing, and thus are kept sharp by the necessary attrition If either an upper or a lower incisor is broken off, the opposite tooth continues to grow; and as the fang is curved, the extra growth will form a circle which might serve to hang the animal up. I have found one or two skulls where such extra growth has pierced the cranial cavity and entered the brain—a case, of course, of unintentional suicide. The rabbit and hare belong to the family *Leporidæ.* These animals have four upper incisors instead of two. This, with their looser structure and long legs, makes it easy to distinguish them from other rodents. Both hares and rabbits belong to the genus *Lepus*, which, like the family name, is derived from the Latin for hare. This is the only extant genus of the family.

FOUR LORD BRITAIN'S DOES, FIVE MONTHS OLD.

There are a great many species of this genus, and they are found in nearly all parts of the world. Many of them have been domesticated. My space forbids mention of more than a few of these. *Lepus timidus* is the fine graceful English hare, which is so famous in the sporting world. *Lepus campestris* is the common rabbit of America which whitens in winter. *Lepus callotus* is the jack-rabbit of the United States. *Lepus sylvaticus* and *Lepus Californicus* are the common cotton-tails, which are somewhat prized as game animals. I hardly need say that many of these rabbits are serious pests to the horticulturist. The California rabbit is so fearless here that he comes by night close up by our houses, and, unless prevented, will girdle our finest trees, or prune very unscientifically our vines and shrubs. They also have a great fondness for the clover lawns. *Our* pet trees and shrubs are at present either guarded by a wire cylinder about them, or wrapped with gray carpet paper to fence off this evil. Many readers of GLEANINGS have read of the famous rabbit-drives of California, where hundreds of hunters go forth with horse and gun and drive the little rodents into an inclosure where myriads are killed. Hundreds of thousands of these leporines have been destroyed in a single drive in the San Joaquin Valley.

The common names, hare and rabbit, though hardly scientific, have really distinct meanings. *Lepus timidus* and *Lepus callotus* are really hares. These are larger, never burrow, and are usually less prolific than are the rabbits. The first one mentioned above produces only two in each litter. The young, too, of hares are active at birth, and can at once flee from danger. The rabbits, on the other hand, well illustrated in our cotton-tails, form burrows or warrens where the young are born. They are smaller that the hares, the meat is more juicy and tender, and the young born blind and hairless, and, like kittens (a name which is often applied to young rabbits), are inactive for some time after birth. We would say, then, that the rabbits are higher than the hares, as we always consider it a mark of higher development where the young are inactive at first, and must be of necessity concealed and cared for by the mother. We readily see that this is a higher condition, as the young is guarded during the time when it is least able to flee from or ward off danger.

From what I have just said it will be seen that the term Belgian hare is a misnomer. This is a burrowing animal, and so a rabbit. It is probably derived from *Lepus caniculus.*

IMPORTED BUCK, DUKE OF AUKLAND; OWNED BY S. N. KEMP, LOS ANGELES.

I have already stated that many species of rabbits have been domesticated. The lop-eared rabbit is almost a monstrosity, as its ears are oftentimes 22 inches long and 6 inches wide. It has a large dew-lap, which is absent in the well-bred Belgian. The colors of this rabbit are very varied, and it is so difficult to rear that it has not been much bred in this country. The Dutch rabbit is small, very pretty, hardy, and prolific; and, because of their fine milking qualities, have been used for nursing purposes by the breeders of Belgians. The Himalayan is white, with soft fur, and has ears, nose, feet, and tail almost black. Thus they are exceedingly handsome. As we should expect from their nativity, they are hardy and quite prolific. They weigh from five to seven pounds. The Egyptian rabbit would seem an enlarged Himalayan, so close is the resemblance. It also has black rings around its eyes, and is said to be very superior for table use. The Japanese rabbit resembles closely the Dutch. It is said to be beautiful in its markings, and very hardy and prolific. The Angora rabbit is remarkable for its long, fine, fleecy wool, making it appear of great size. The most valuable ones are the albinos, having white hair and pink eyes. In this respect—red eyes—they are like the Himalayan. The Siberian rabbit is marked like the Himalayan, but has the thick, glossy hair of the Angora. The Polish rabbit is probably only an albino, and so, as we should expect, is not hardy, and makes neither a good breeder nor mother. The English rabbit is spotted black and white. It is popular with the English fancier. The silver-gray rabbit is very popular—indeed, perhaps the favorite with the English fancier. The color is dark blue, silvered with white hairs tipped with black. The Patagonian rabbit is the Jumbo of the family, often weighing fifteen pounds or upward. It has been claimed as an offshoot of the Belgian or Flemish. It is not as beautiful as either of the last two mentioned. I shall speak of only one more, the Flemish Giant, which is probably only racially distinct from our favorite, the Belgian. As we shall see, it is likely that the Belgian rabbit and the Flemish Giant are races developed from the old Belgian rabbit, *Lepus caniculus*. The Flemish Giant is now very distinct from the Belgian, being much larger. The two varieties have been much crossed. I presume that the Flemish Giant ranks next to the Belgian in popularity the world over. The color is dark steel gray, while its ears are about six inches long, and, like those of the Belgian, are carried erect. Unlike the properly bred Belgian, it possesses a large dew-lap. Like the Belgian, it is very prolific.

The Belgian hare—we have seen this should be Belgian rabbit instead of Belgian hare, or, as some call it, Belgian hare-rabbit, which is really making a bad matter worse—is a well-marked breed or race. A race or breed is a variety of some species which has been so long bred in nature or by man that its characteristics have become well fixed. The Italian bee is a race formed, I think, in nature by isolation; the shorthorn cattle and Belgian hares are races or breeds formed more quickly by the intelligent selection of man. We now know that all our species of animals were developed in nature by the slow process of natural selection. The process of this was well worked out by Charles Darwin, and is now accepted by all intelligent students of the subject. It is briefly this: All animals—the same is true of plants—tend to vary. We all know this. No two children of a family are exactly alike, neither is either one exactly like either parent. Darwin thought this tendency to vary was inherent—a natural peculiarity implanted in the very economy of the organism. He says, over and over, "All organisms tend to vary." Other scientists hold, and I think with much reason, that all organisms tend to be exactly like their parents, but are swayed by environment, and thus the variation. The impress must vary from the very time of conception, and varying impressions produce the resultant variations. If, now, any variation in animal or plant—in the rabbit it might be in longer legs, making it more fleet—is an advantage to the animal it will have a better chance to survive, while its brothers will be more apt to go to the wall. By this slow, natural selection all our species have been formed. Before the differences were very marked, yet were fixed, these varying forms would have been races or breeds. The Italian bee is an illustration of such a race. It is not so different from other bees as to be ranked a distinct species; yet its peculiarities of color and habit are very persistent. Man works with more rapidity than nature, as he selects more carefully and certainly, and weeds out more surely and relentlessly. We see, then, that man might make a species in a few years, while it might take nature centuries to do the same. A race, then, is an incipient species, and races and species differ only in degree of modification.

The Belgian hare was, so far as I can determine, produced about a hundred years ago in the country which has given it its name. As we have seen, the species from which it was derived was probably *Lepus caniculus*. By careful selection, as we may believe, two well-marked races, the large gray Flemish Giant and the smaller rufus-red Belgian hare were developed. About forty years ago the latter of these two breeds was introduced into England, where it at once became a marked favorite. The English fanciers, true to their patriotic instincts, took the English hare as a model in color and form in their breeding of this new race. With the English hare as the ideal, they progressed very rapidly in developing a very superior rabbit; and to-day, unless we may except our own people in these last few years, our brothers of the British Isles lead the world.

Claremont, Cal.

Continued.

THE HONEY-DEW QUESTION.

The Sources of the Good and Bad Honey-dew.

BY A. J. COOK.

I am more and more of the opinion that honey-dew is almost if not quite the exclusive product of plant-lice or scale insects. I had a very interesting object-lesson in this direction while making a visit recently in the great Yosemite Valley. July 9th our party went to the summit of Cloud Rest, one of the highest peaks in the sight of the Yosemite Valley. The top of this mountain is over 10,000 feet above the surface of the sea, and more than a mile above the floor of the valley. About a mile before we reached the top of the mountain nearly all of the pine-trees were thickly studded with what looked like great mammoth drops of dew. As the sun was just about on the meridian at the time, we of course knew that it could not be dew. In fact, I knew at once the real cause of the phenomenon. Several of my students were with me, and I at once urged them to divine the cause and nature of these glittering spheres. Chaparral under the pines was glistening with the same thick substance. The students soon found that it was not only a sweet substance, but that the sweet was delicious to the taste; as one said, "It is as nice as the best honey." They found that it was only on the chaparral under the pine-trees, and so at once began to search in the pines to ascertain the cause or origin of this sweet substance. They examined many low limbs as far as they could reach from their horses' backs; and while they found much of the nectar, some of it even crystallized, they did not at once find any cause for its presence. We were, however, on a sort of scientific expedition, and had learned to be satisfied with one or even several observations. So the young men kept on making examinations, and soon found some plump, dark-colored plant-lice. On many of the limbs, these were so crowded on the twigs that they almost obscured the plant. The young men then looked at other plants which they had examined before, and in every case, higher up, the insects were found. We see from this how easy it is to make mistakes in such matters.

I think I have seen honey-dew in very copious quantities before; but I never saw any thing comparable to this exhibition on Cloud Rest. It was very easy to collect a sufficient amount to get a good taste, and so it was very easy to test the quality of the honey-dew. The students had discovered its excellence before they had found out its origin, and this latter fact did not at all abate their appetites. We can hardly be sure that the same would be true had they known its source at first. Do we not get a lesson, Mr. Editor, right here? Is not nectar like people—to be judged by its quality rather than its origin? I have had opportunity in my life, several times, to test in like manner this honey-dew secreted by aphides, or plant-lice; and I have found in nearly if not every case that the quality of the nectar was excellent. The honey-dew, on the other hand, from coccids, or scale insects, is as surely dark in color and bitter and disagreeable to the taste. A little of it will darken and spoil the best of honey, while I doubt if we need ever fear injury by the presence of plant-louse honey.

It is interesting to note the absence of bees in this region. I did not see a single bee, and very few nectar-loving insects. I presume there is not usually enough nectar to support bees in the vicinity. I wish I might have a good apiary right there for a few days. It certainly would prove a bonanza. The honey would surely go in as A No. 1.

Claremont, Cal., July 30.

SHOP TALKS
BY UNCLE LISHA

IS IT GOOD BUSINESS POLICY FOR A BEE-KEEPER TO MIGRATE TO A NEW LOCALITY? HIGH LICENSE OR PROHIBITION; REFORMED SPELLING.

A few days ago I went over to Deacon Strong's to borrow a post-auger. I never had much use for one, and so I had never owned one; but I knew the deacon would be glad to lend me his; indeed, he seemed greatly pleased with an opportunity to do me a favor.

After we had talked a little he invited me out to see his bees and his chickens that looked as though it was just fun to live and grow, and I was about to leave when Charley Atkins drove up, and in a kind of breezy way asked the deacon if he could spare him fifteen or twenty hives of bees next fall.

"What do you want more bees for?" said Deacon Strong.

"What is up?" said I, almost at the same time.

"Oh!" said he; and he looked down at the ground, and hesitated a little. "I have got sick of this climate, and I am getting ready to go to Cuba next fall. I am going to take down a hundred hives of bees, and four hundred hives in the flat to set up after I get there, with foundation, extractor, etc. This climate is awful—cold half the year and hot half the year, a good deal like the place where Milton consigned his devils where they would roast part of the time and then freeze a while lest they should get used to being frozen or roasted, and enjoy it."

I thought I would put in a word just here, and said:

"I have been down in the tropics myself, and know something about them; and, although it is warm all the year round, or, perhaps I should say, hot, that climate is not altogether perfect, and I believe I like a chance to cool off once in a while; besides, I can keep warm here in winter a good deal cheaper than I can keep cool down there in summer. I have studied climates a good deal, and I find there are drawbacks almost everywhere. If you stay right here you will get, in the course of a year, almost all the climates in the world. At any rate, I believe we have as large an assortment as you will find anywhere. When the mercury goes up to 95° I say to myself, 'This is the way it feels and seems in Cuba, but not so damp;' and when it goes 30° below zero I realize how it seems in Greenland in winter. When we have a drouth, and every thing turns yellow, and the leaves wither as they did last summer, I say, 'This is much as it is in California in summer, without the dust;' and when in June the earth is green and the mountains are in their beauty, and the air vocal with birds' songs and humming bees, this is New England. And then we have our Indian summers and all the variations, with an occasional small earthquake that will fit almost any corner of the earth. But climates that are faultless are not plentiful, and I sometimes think we shall have to wait till we get into the next world before we find one that is perfect."

"Some of us may find it too hot for us there," said Tim Fasset, who was just going by with his new dog he bought for twenty-five dollars —half spaniel and half hound—good for foxes and coons and rabbits and squirrels; and they say they think it would follow a deer if the law would allow. I noticed the deacon tried to look serious when I spoke of the next world, but could not help being amused at Tim's droll way of looking at things.

"Well, it is not altogether a matter of climate with me," said Atkins; "but I thought if I was going to make a business of bee-keeping I might as well begin where there are plenty of flowers and lots of honey."

So we all began to discuss locations, as bee-keepers will. Of course, Charley Atkins thought Cuba the bee-keeper's paradise. But I told him of the long-continued heat and the worse dampness; the insects, the lack of good society, etc.

"Well," said Charley, "I think I can stand the heat, and I guess there aren't any insects much worse than the bees themselves; and as for society, my wife is as good society as I want."

"Good!" said Deacon Strong. "I like to see a man stand by and appreciate his wife; but did you ever think your wife may not be able to remain there long? I have known a good many families to go no further south than Florida, and it would not be many years before their wives or daughters, or both or all, would be coming north to visit; and they would visit all their brothers and sisters and uncles and aunts, staying at each place a good long while. They seemed to have learned the art of sitting to perfection, and looked so contented like when sitting, as though they had kind o' grown to the chair. And pretty soon the head of the family would come too. His skin was several shades darker than when he went south. He usually goes into ecstasy over our invigorating climate, and thinks he had better stay. And as for insects, I met a bee-keeper from Florida a few years ago, a regular cracker, as northern folks call them, and I asked him what kind of place it was in Florida for bee-keeping. 'Well,' said he, 'it is a perty good place over on the Indian River, where there are plenty of orange groves and mangrove. The mangrove gives lots of honey, and of perty good quality, when the frost doesn't kill it;' but then he thought of some of the vexations even in that favored locality, and added, 'But there is one trouble in keeping bees in Florida, when you handle your bees you have to wear a bee-veil to keep off the misquitoes.' So you see there are troubles, even in that land of flowers."

"There is another thing; we must not forget about locations," said I. "If there is a big yield in any section of country we hear of it and are apt to think that the best place in the world. One year Mr. Manum, of Bristol, Vt., had an enormous yield of honey; yet now, owing to cutting down the basswood, and other causes, the yield of honey is scarcely large enough to make bee-keeping pay, and he is turning his attention to fruit and garden truck. A place may be very good one year and very poor the next. They seem to get pretty good crops in the buckwheat sections of New York, but sometimes the buckwheat fails to yield honey, and it almost always sells for less than white honey. I have always thought the central parts of Vermont were very poor for honey; yet Mr. M. F. Cram, secretary of the Vermont Bee-keepers' Association, had last year, I believe, the largest crop of honey of any person in Vermont, and perhaps in New England, and he had a fine crop the year before. He lives in a queer place to think of making bees pay. I made him a visit last summer, and found to my surprise he lived near the top of a great hill. After walking up what is known as Cram Hill until I perspired profusely, and was not a little weary, I found his place. I am afraid I wasn't very polite; for, almost as soon as I found him, I accused him of being pretty well stuck up. He said he didn't think he was, as he was only 2000 feet above sea-level, which he considered very moderate. Here he makes it pay in producing choice honey that he sells for prices that might please any bee-keeper at the present time.

"Then there is California; but they have drouths, or dry years, and many of the bee-keepers have to leave their families and bach it, as Rambler does; and while some years they get large crops it doesn't sell as high as our honey right near the markets—at least doesn't net them so much. In Colorado they are already overstocked with bees, and so it goes."

"I guess," said Deacon Strong, "finding a good place to begin bee-keeping is a good deal like finding a good place to begin to be a Christian. Some folks seem to think it would not be difficult if they were only living among strangers, or were out west, or following some other occupation; but I believe there is no better place than right where you are. Most of our successful bee-keepers began right where they were, and have made the business pay."

"Johnnie, what is the matter now?" said Tim Fasset to his boy who was going by on his way home from school, sobbing as though his heart would break.

"Oh!" said the little fellow, "I didn't have any luck at spelling to-day. The teacher put out *slow* to John Gilpin, and he spelled it s-l-o-w. And then she put out *mow* to Dick Carey, and he spelled it m-o-w. And then she put out *dough* to me, and I spelled it *d-o-w*, and the teacher said it wa'n't right—said it was spelled *d-o-u-g-h*. I don't see why."

"Come here," said Deacon Strong; and he took the boy up in his arms and told him he spelled right—the trouble was, the English was wrong.

"I can't have you talking such nonsense as that to my children," said Miss Barton, the teacher, rather crisply.

"Why not?" said the deacon.

"Why," said Miss Barton, "because that is the way it is spelled, and that is the way our fathers and grandfathers spelled it. Words have a history, and we should lose their history if we didn't spell as our fathers did."

"Suppose," said Tim Fasset, "we were to keep bees just as our fathers did, without making any change."

"I guess the price of honey would be higher than it is now," said Charley Atkins.

"I tell you," said Deacon Strong, "if I could have my way I would have a few more letters invented to represent every sound in the English language, and I would then spell it straight, and leave the history for the dictionaries."

How much more he would have said, I don't know; for just then Col. Wickham drove up with his team that he was offered three hundred dollars each for.

"Deacon," said he, "we are going to try to run Sylvester Williams for Senator from this county, and we should like to have you nominate him in the county convention."

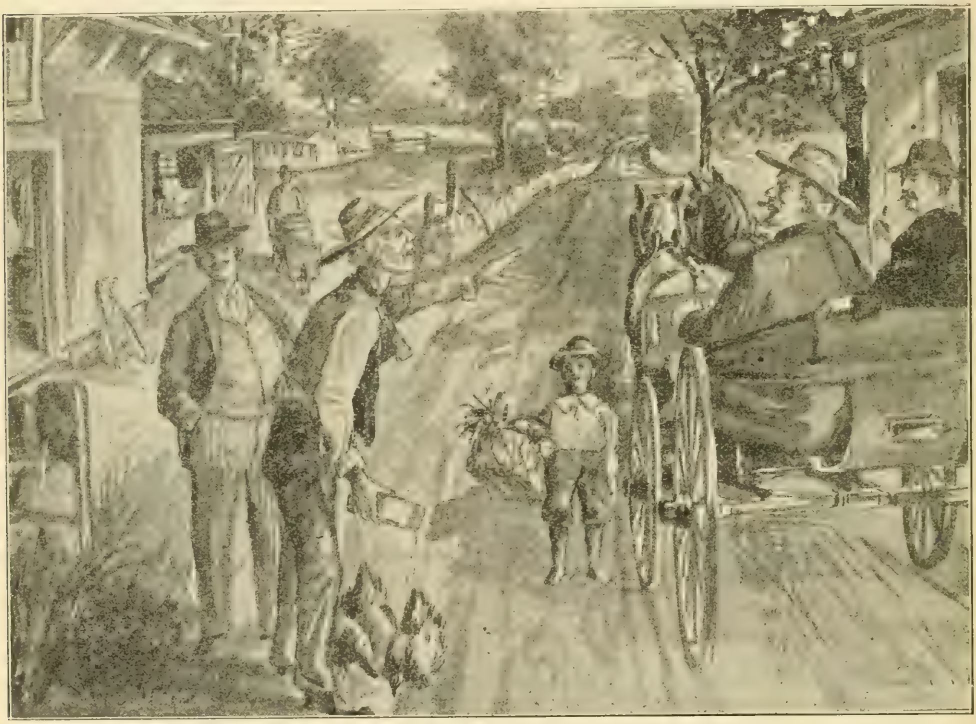
"What kind of a man is he?" inquired Deacon Strong.

"Oh!" said the colonel, "he is all right. He is a good business man and a temperance man; no one ever heard of his getting drunk. He might prefer a good high-license law to a prohibitory law; but he is all right, and he is a good church-member too."

"I don't care whether he is a member of the church or the sanhedrin, or a bishop; if he is willing to license that abomination I won't support him," said the deacon; and his face began to blush, and his eyes show fire.

"But," said Col. Wickham, soothingly, "you know prohibition doesn't prohibit, and—"

"It's a lie!" said the deacon. "Prohibition does prohibit, always prohibits. Doesn't the decalogue prohibit murder? Doesn't it prohibit adultery and theft and lying? It may not prevent—there is no human law that does."



"THAT'S WHAT I INTEND TO DO, BEAT THE DEUCE EVERY TIME."

The colonel had to admit that it did.

"But," said he, trying to soothe the deacon's ruffled spirit, "don't you think that a good law regulating what we can not wholly prevent would be a good thing?"

"Regulate!" said Deacon Strong, as he straightened himself up; "yes, regulate theft! regulate adultery! regulate murder! regulate the saloon! regulate the Devil! One would suppose that a man of your caliber would be in better business."

The colonel hitched around on his seat as though he didn't sit quite comfortably, as he remarked, "I believe, deacon, you are a regular prohibition crank. If you would come out of your hole and unite with the rest of us we might have union, and be strong enough to do something for temperance worth while. I am just as good a temperance man as you."

"Come out of my hole!" said the deacon. "You make me think of a story I have heard somewhere. There was a cat, a very good cat as cats go, that attended to all its feline duties faithfully; but there was a little mouse it could not get hold of. It would just run in its hole a little beyond the reach of her paw. One afternoon she sat beside that hole a long time, looking very amiable, and then said, 'Come out of your hole, little mousie; let's be friends. I am just as good an animal as you are. Come out of your hole, little mousie; let's be united; let's have union.' And that mouse was a goodie-goodie little mouse, and it came out of its hole, and they were united, and there was union; but it was all cat."

"You beat the Devil," said Col. Wickham, as he drew up his reins, and said "go" to his horses.

"That is what I intend to do," said Deacon Strong.

CONVERSATIONS WITH DOOLITTLE.

SULPHURING COMB HONEY.

"Say, Mr. Doolittle, I came over this morning to have a little talk with you about moth-worms in comb honey. A bee-keeping friend lent me some of his old bee-papers, and in them I see that there is sometimes danger of the larva of the wax-moth injuring comb honey by eating the cappings to the cells. What do you know of this matter?"

"Well, Mr. Jones, I have yet to see the pile of 2500 lbs. of comb honey which does not have more or less of these worms or larvæ upon it, after it has been stored in a warm room for three to four weeks, though these pests are not nearly so bad as they used to be 25 or 30 years ago, owing mostly to Italian bees being kept now instead of the blacks."

"What has the Italian bee got to do in the matter, I should like to know?"

"Italian bees are much better in protecting their combs from the wax-moth than are the German or black bees, and this one point alone would almost lead me to change from blacks to Italians, were they not superior to the blacks in other respects."

"How do the worms get on the comb honey? I read that the bees would not allow the female miller to enter the hives to deposit her eggs on the combs."

"This is a somewhat disputed point. Some think because they have seen the bees chasing the millers away from the entrance of the hive that the bees never allow them to enter, and so account for the eggs getting on the combs through being carried there on the bees' feet, or in some such way. I am not sure myself how the eggs get on the combs, but I have seen the millers dart into the hive many times; and, though I have watched patiently for nearly an hour at times, I have not seen them come out again. At other times the bees will rush them out as soon as they go into the hive."

"How do you know when the worms first begin to work?"

"After the honey has been away from the bees for about ten days, if we inspect the cappings of the honey closely we can detect little places of fine white dust, resembling flour, upon the surface of the comb, and usually the most abundant near the bottom of the combs, and especially about any open cells containing pollen, should we happen to have any sections having pollen in them. Although this little speck of dust may not be larger than the eye of a very fine needle, still it tells us for certain that a tiny worm of the wax-moth is there, and that, unless it is destroyed, it will destroy more or less of the nice white comb which encases our honey."

"Did you ever see any thus destroyed?"

"Yes. I have had, in former years, combs of honey entirely denuded of the cappings to the cells, with the honey running all about on the floor under the pile, but never after I was fully aware what was the trouble. Then while in different cities, some years ago, looking after the honey market, I saw boxes of honey which had worms in them nearly as large around as a slate pencil, and an inch or more long; and the strange part of it was that, although they had nearly denuded the honey of the cappings to the cells, I could not make the grocer believe that the worms lived on the wax, they calling them honey-worms."

"If I find these flour-like places on my comb honey, what should I do?"

"The next thing is to sulphur your honey, as this is the only practical known remedy for these pests."

"How is this done?"

"To do this I take an old iron kettle and put an inch or two of ashes in the bottom so there will be no danger of fire resulting from the heat from the coals which are to be placed therein."

"A kettle, some ashes in the bottom, and live coals put on the ashes?"

"Yes; and when I have the kettle thus prepared I take it to the honey-room and pour sulphur, which has been previously weighed, on the coals, to the amount of 4 ounces to every 75 cubic feet contained in the room, when the kettle is quickly pushed under the pile of honey, which is purposely piled loosely and up a little from the floor. The room is now closed as tightly as possible, and you will have to be a little spry in what you do after you pour on the sulphur if you have weak lungs, or you may suffer from the fumes yourself."

"How do you tell when it is sulphured enough?"

As soon as the room is closed I go to the window and look in. Presently the few flies which may chance to be in the room will try to get out by coming to the windows. I watch these flies. Their legs and wings soon begin to be paralyzed; and as soon as I see that the last fly is lifeless I wait five minutes longer, when I open the door and windows, so as to carry out the smoke as soon as possible."

"Why do you want it out? I should think it would be better to let the honey steep in it a while till sure all worms are killed."

"If this smoke is allowed to settle it will give the combs and sections a greenish color which will damage the sale of our honey. The same thing will also be likely to occur if more sulphur is burned than I give you. It seems to be quite a nice point to get this matter right; for if too little is used the worms will not be killed, while if too much is used the combs are sure to be turned green. The amount I have given you has been arrived at after years of careful trial and experimenting."

"Does one sulphuring suffice?"

"Yes, unless more honey is brought into the room after the first has been sulphured. If so, then this last has to be watched; and when the flour-like places are seen this must be sulphured also, or the whole, if the first has not been taken out and sent to market, or otherwise disposed of. No honey should leave the hands of the producer until there is no danger of these pests making an appearance after it has been placed on the market."

"I see there is more in the production of honey than I thought there was. I thought it was a very simple matter till I got started in the business."

"Glad to know that you realize something of this, for very many beginners rush their surplus on the market with little thought of how it looks or what comes of it after it leaves their hands, thereby hurting the market for the man who leaves no stone unturned that his honey may reach the market in perfect shape and appearance, and one which will last until the honey is all in the consumer's hands."

"Well, I have bothered you long enough, and I'll be going."

HEADS OF GRAIN FROM DIFFERENT FIELDS

FEEDING BEES WITH SQUIRT-GUNS; A RAPID AND PRACTICAL METHOD OF FEEDING.

In reading Mr. Victor's article on stimulative feeding, page 517, it seems to me that to depend on the force of gravity to get the feed into the hive would be rather slow work. Why not apply muscular force, getting the same result in a fraction of the time? If he will get a common bicycle-pump, about 12 inches long by one inch in diameter, unscrew the lower end, and in its place attach a curved flat nozzle, say 2½ in. long by one inch wide, he will have a rapid-fire honey-gun that will do great execution. Dip the end of the gun into the bucket of thin syrup or honey, and then draw on the handle until the proper quantity is sucked into the gun, then fire it into the hive. If one wished to feed exactly the same amount to each colony, marks might be made on the piston-rod showing the number of fluid ounces the gun would hold if the rod was drawn out up to that mark, etc. In practice, however, I think one would soon get used to drawing the handle out the proper distance, and would pay no attention to the marks.

Three years ago I had occasion to do a little stimulative feeding, and with an implement of this sort I could feed 100 colonies in a little less than 12 minutes. Ordinarily one might take 15 to 18 minutes to feed 100 colonies, but even then it would be rapid feeding.

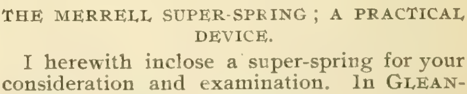
Another thing, it won't be necessary to spend any time pounding on the hives to let the bees know that supper is ready. Just insert the nozzle into the entrance, give a quick push on the handle, and the ration will be left on the bottom-board, or else it will strike the back end of the hive and fly in all directions, or it will be sent kiting up among the bees, depending on the "elevation" you give the gun and the force applied to the handle. It is far ahead of any other method for *stimulative* feeding that I ever heard of.

San Diego, Cal., July 30. G. F. Hyde.

[Well, now, friend Hyde, I believe you have struck on something that is valuable and practicable. I just *know* it would work. Nearly every one has a bicycle, and can very quickly put the plan to a test. But if he has not a wheel he can buy one of these pumps at a repair-shop for about 25 cents. I am inclined to think something made specially for the purpose will be better still. I would construct a bicycle-pump with a longer barrel, without hose, and on the end have a stationary curved nozzle. If the pumps are about 18 inches long one could reach down to the pan of syrup, shove the nozzle into the entrance of the hive, and squirt the food between all the combs and all through the hive. If this were done at night there would be no danger from robbers, and I will guarantee there is no method for stimulative feeding that would equal this for rapidity of work. I will have a pump made on purpose, and have the thing tested at once. —Ed.]

THE MERRELL SUPER-SPRING; A PRACTICAL DEVICE.

I herewith inclose a super-spring for your consideration and examination. In Gleanings for June 15 I see Mr. W. D. Wright claims to have originated the round spring.



Now, he may have claim to his spring in shape, but I don't think he has the right bend in it. The spring I send you I call the hair-pin spring, and you have only to have a lady's shoe-button hook to draw the spring from the super. Thus you see you can loosen the sections without any trouble or jerking while on the hives. All you have to do is to slip one of these springs behind the follower at each end of the super.

How I came to get the new idea, the new super sent out has a spring that I consider a failure, and I set to thinking for something better, and I am certain I have it.

Edneyville, N. C. JOHN A. MERRELL.

[I have seen a good many forms of super-springs, but I believe you have hit upon the most practical construction yet. They can be easily made, and have the advantage that they can be drawn out with a button-hook, leaving the follower, sections, and every thing else, practically loose. Indeed, we think seriously of adopting them for another season, and, if so, we will see that you are suitably rewarded.—ED.]

FLOORS FOR BELGIAN-HARE PENS.

I have read with considerable interest all that GLEANINGS has to say about the Belgian hares, and have visited some of the rabbitries here, and asked many questions of the owners. July 1, Dr. Miller asks if the pens must have a tight floor. On p. 520 we are told the floors must be absolutely tight. Perhaps in a damp country that is true. Here I have seen them made like the rest of the cage, of poultry-netting. The owner said he cleaned up every other day, but every day would be better. He turns out some, if not doing well, into a half-acre lot; says they seldom trouble about burrowing, but he is careful not to allow a beginning, and promptly closes any hole begun. He feeds alfalfa hay, and grain—very little green feed; pulls some weeds; sells dressed meat at 12½ cts. The business will probably find its level in time. L. W. DENSMORE.

Santa Barbara, Cal., July 31.

SOME NON-SWARMING BEES.

Some time ago I noticed quite a lot of talk about a non-swarming strain of bees. I doubt if it will ever be found, but I think I have the next thing to it—not a swarm in four years. This colony's honey-record is 116, 70, 124, 192. They are hybrids.

Some time ago I received a select tested queen, and introduced her to a colony of blacks. She laid very few worker eggs—just enough to keep the population of hive fair, and any quantity of drone eggs. Last April I introduced her to a colony of hybrids. She at once commenced to lay, and has kept right at it ever since—kept ten frames full of brood, and her bees are now on their second 40-lb. super. Will some of the older heads please account for the sudden change?

G. W. CARTER.

Jamestown, N. Y., June 30.

AGE OF LARVÆ FOR QUEENS.

I have 14 prosperous colonies with laying queens, and hives well filled with honey, bees, and brood, as the result of my efforts, all from nuclei, by moving the old stand and placing two or three frames of eggs and brood on the old stand, letting them raise their own queens. I became very much discouraged with the first ones on finding no appearance of queen-cells that I could see; but about the third or fourth day I could see queen-cells started, and every time I looked I could find more queen-cells started for about a week. I came to the conclusion that the disorder and confusion incident to the removal of the old stand with the queen kept the cell-building and queen-rearing instinct in abeyance for a time, and after a while it occurred to some, and still later to others, that they needed a queen. The honey-flow was in wasteful profusion.

L. R. STROUD.

Cleburn, Texas, July 12, 1900.

[As this was more in Dr. Miller's line of experiments I referred it to him. He replies:]

The disorder and confusion incident to removal would hardly account for delay in starting queen-cells, for that would only make the bees notice their queenlessness the sooner. If you depended altogether on field-bees returning to the old stand to form your nuclei, you would have bees that had given up the duty of feeding larvæ, and it would not be strange that it would take to the third or fourth day to get in condition for such work.

While *you* have been successful in building up good colonies, the plan of depending on old bees to start nuclei is not to be commended, and your success might have been greater with a different plan. C. C. MILLER.

Marengo, Ill.

A GOOD REPORT FROM CALIFORNIA.

Our honey-flow is over for this season, and for the third dry season in succession our bees did well. My bees averaged 100 lbs. extracted honey. Hon. J. M. Hambaugh's bees made the best record, so far as I know—between eight and nine tons from 90 colonies, spring count. Other apiaries averaged one case per colony in this part of San Diego County. The flow ran through May, June, and a week in July, in my locality; and in and around Escondido, April weather helped a good flow of white honey for that month.

One of our grocery firms bought nearly all the crops here, and now they pay 5¼ cts. for light amber and amber in lots, as it comes. Water white started at six cents, and fell to 5½; then back to 5¾. So far as I know, there is very little honey in the hands of the producer now.

I had a little experience with the "Draper barns" this season, and, so far as I am able to say, I think they will prove a success in this part of California. M. D. NICHOLS.

Escondido, Cal., Aug. 6.

At your request some time ago as to honey surplus this season, I would say it has been one of the poorest on record with me in my 8 years' experience with bees, and I have more than I ever kept at one time—35 colonies. We have just had another rain, and hope to get some fall surplus. Queen received all right.

Cincinnati, O., Aug. 2. C. ROEBLING.

EDITORIAL

BY

E. R. ROOT

IN our own locality we have been having a light flow of honey, probably from second-growth clover. A few days ago robbing was the order of the day, but now it is almost entirely stopped. While there is no great showing in the hives, our queen-rearing operations are going on at a good rate.

ON page 646 of this number will be found an article telling all about how to bleach comb honey. The *modus operandi* is somewhat similar to the one we illustrated some time ago; but friend Crombie has made an improvement in that bleaching by the two methods—sulphur and sunlight—is all done in the same building.

OUR subscription clerk informs me that GLEANINGS subscription-list of paid-up subscribers is now the largest it ever has been since its existence, and it is still jumping up. Considering the poorness of the season, we feel grateful to our many friends and patrons; but when honey fails, the wise bee-keeper is the one who will keep up his bee-literature so that he may be able to profit by all that is latest and best.

OUR Mr. Wardell has been trying all the different methods for queen-rearing. At present he rather favors the drone-cell cup, but he says when he can get plenty of the Pridgen cups he prefers them. I have tried to make Mr. Wardell think that transferring the cocoons *a la* Pridgen would be a saving; but after having tried it he prefers the Doolittle plan of putting the royal jelly into the cup or drone-cell as the case may be. In his experience he gets more of them accepted where the royal food has been given than where he transfers cocoons; but Dr. Miller's experience, I I understand, is quite the reverse.

THE LANGSTROTH MONUMENT.

WE have just received word from General Manager Secor, of the National Bee-keepers' Association, stating that the Langstroth monument cost $300, and that the same has been paid for; and, if I am correct, by grateful bee-keepers in this and other lands. We had sent on the sums of money placed in our hands, amounting to some $93.98; and these and other funds have been forwarded to cover the expense of the monument, "and the matter is all closed up," says Mr. Secor. It will be remembered that, before he took hold of it, we were enabled to raise only about $150, but he has doubled it.

If it is a possible thing I hope to have a photo of it in time so I can throw it on the screen at the Chicago convention, together with a picture of Langstroth himself. Appropriate words will be offered by Dr. C. C. Miller, in connection with a short biographical sketch.

HONEY FOR 1900; GETTING GOOD PRICES.

THERE is very little new to report about the honey season this year. In general it may be said to be a poor year. But Michigan and Colorado seem to be especially well favored above all their sister States. We are beginning to find, however, that in many of the States where poor yields were generally reported, a great deal of honey has been taken; but those who have a crop to dispose of are a little shy about making the fact known. It is folly to wait too long. The time to get good prices is usually at the very beginning of the first new honey, and just before the holidays.

As will be seen by the Honey Column elsewhere, the markets are firm; but there is hardly a probability that honey will go much higher than it now is. Now is the time for the intelligent bee-keeper to study his own local market and his city market, and then decide where he will dispose of his crop.

DR. MASON "INTERVIEWED" BY A REPORTER.

IN the *Toledo Blade* for Saturday, Aug. 4, appears a very interesting article entitled "Bees and their Wonderful Talents." It appears that one of the reporters of this enterprising paper visited Dr. A. B. Mason, Secretary of the National Bee-keepers' Association, and posted up generally on the subject of bees. The article speaks very highly of the genial secretary, and describes him just as we know him, and then goes on to tell the uninitiated public some of the secrets of the hive, in an interesting and instructive manner. In the statement of facts it is wonderfully free from error; and any reporter who could, after an interview, write so good an article on bees, without any practical knowledge beforehand, deserves the thanks of bee-keepers.

Such articles as these, especially when the material is from practical men, do a vast deal of good. They break down the general distrust against comb honey, and tell the public generally how the product can be produced annually in such immense quantities.

I forgot to mention that the engravings of the drone, queen, and worker, as made by the *Blade* artist, are strikingly accurate. They would satisfy the most exacting taste of any bee-journal editor.

BEE INSPECTION IN THE STATE OF NEW YORK; PREVALENCE OF BLACK BROOD.

THE following will be read with interest by all bee-keepers of the Empire State:

> The Commissioner of Agriculture, under the provisions of Chapter 223, Laws of 1899, appointed four agents to carry out the work of inspection of bees.
>
> Up to the present time the work has been confined to a few counties where the diseases have been most injurious to this great industry.
>
> The agents of this department are all experts in bee culture, and have done a great amount of good work among the owners of apiaries, giving instruction on the care of bees, and especially suggesting remedies for their diseases.
>
> The Commissioner has had a bulletin prepared on the black (foul) brood among bees, and will send copies to applicants.
>
> A compilation of the reports of the agents since the work began on the first of May to the 21st of July shows as follows; viz.:

Number of apiaries visited	633.
Number of colonies examined	14,763.
Number of colonies diseased	4689.
Number of colonies condemned	2604.
Number of colonies destroyed	214.

The colonies destroyed were so badly diseased that no treatment could save them, and those condemned were simply set aside for treatment.

The Commissioner will be pleased to receive letters from those in this State who have bees, and he is anxious to do any thing in his power to increase the product of the apiaries.

This report was sent to us, but arrived too late for our issue for Aug. 1. It shows the awful prevalence of black brood throughout New York, but on the other hand it also shows the thorough work that is being done by the Commissioner of Agriculture; and if this work continues, as it undoubtedly will, there is no reason why the disease will not be checked by another season. The one-inspector plan could not have accomplished such results, and it is evident that the bee keepers of New York have just the law that is needed, for the work is divided among a lot of competent experts who have this season had their hands full.

THE CHICAGO CONVENTION, AGAIN.

REMEMBER the date of the big Chicago convention on the 28th, 29th, and 30th of this month, program of which is given on page 665 of this issue. As the time goes on, there is every indication to show that this is going to be a big convention. The very low rate of a cent a mile each way, announced by some of the big roads, will enable many to go who would otherwise feel they could not afford the expense.

I am preparing for this particular convention something like 200 stereopticon slides. These will comprise portraits and apiaries of the leading bee-keepers, not only of this country but of other lands; various methods of manipulation of the bees, hives, and implements will also be illustrated, including a new plan for bleaching comb honey. The pictures will all be first-class; and with a first-class stereopticon, I feel very confident that we shall give the bee-keepers a good treat. It will be practically a trip around the bee-keeping world. A part of the journey I will take you along on my bicycle, and show you what I have seen. Mr. Hutchinson, on the second evening, will take us with him on a trip through Wisconsin and Minnesota. The views on this evening will be especially fine, as they are made from some of Mr. H.'s best photos. Neither pains nor expense has been spared to make the stereopticon feature of this convention one of the strongest that has ever been given.

The question-box will be another prominent feature. The questions are already being prepared by some of the leading bee-keepers of the country, and will be answered by men of skill and experience. The papers that will be presented are from some of the best and most skillful bee-keepers in their respective lines; and altogether, even if I do say it, I believe this will be one of the most profitable and enjoyable conventions that we have ever had.

Unfortunately it has been a poor year for bee-keepers throughout the country, but I feel sure that those who are within reasonable distance of Chicago can not, in spite of the poor season, afford to miss the privileges offered.

Perhaps *after* the convention there will be a sort of honey-harvest festival. We have been invited by L. Kreutzinger, of Chicago, to make a visit to his apiary, and discuss bees and honey. Just what action will be taken will depend on the will of the convention.

With regard to railroad rates, I would suggest that each bee-keeper go to his local agent and find out what he can do. He had better buy a round-trip ticket to the Chicago G. A. R. encampment. As some of the big roads have already offered a cent a mile each way, the probabilities are that the smaller ones will follow suit.

THE PROPORTIONATE WEIGHT OF WAX AND HONEY IN CAPPED COMB HONEY.

ON page 21 of Prof. Gillette's Bulletin No. 54, referred to in our last issue, there is another table that shows the amount of honey in given thickness of capped comb, and the proportionate figures are somewhat interesting, although not contrary to what we should expect. Prof. Gillette says:

> In case of natural comb honey 1 37 inches thick the honey weighed 28.38 times as much as the wax, while the sample .75 of an inch thick, which was built at the same time as the thicker comb and by the side of it, had only 18.43 times as much honey as wax. The intermediate sample (1.13 inches thick) had 26.66 times as much honey as wax.

And, again, in speaking of deep-cell foundation, he adds:

> Passing to the sample of comb on the "1899" deep-cell foundation, we notice, first, that it is much heavier than any of the preceding, and hence much thicker, and in consequence it has a much higher ratio of honey to wax, 1 to 27.75. This is also in keeping with results announced on previous pages, indicating that this foundation is drawn out by bees into a comb approximating the lightness of the natural product.

Once more, in summarizing the whole, he concludes:

> From the facts given in the above table, it is evident that, if we are to secure a comb honey with the least possible amount of wax, it will be necessary to have it built in sections that will secure the greatest thickness of comb. In this way we can also economize very considerably the labor and energy of the bee in wax secretion and comb-building.

The tendency is toward thinner combs rather than thicker ones, the reason being that, in the case of the last-named, there are apt to be more unfinished sections than in the others. Partly completed boxes bring only about half the price of those fully finished. Then the argument is advanced that honey is better ripened in shallow cells than in deeper ones; but experience, as well as Prof. Gillette's tables, goes to show that, the thicker the combs, the less of wax there will be to the given bulk of honey.

His observations regarding the deep-cell foundation are also interesting, as they go to show how perfect was the article, and how groundless were the fears that it would make "gobby" comb honey. Were it not for the mechanical difficulties, or, more exactly, the great cost of turning out this product, we would market deep-cell foundation by the ton; but it requires very delicate die-work, and a man who has unfailing patience, possessing the skill of the finest die-sinker and tool-maker. The first cost of the dies, and the liability to damage or breakage, will, I am afraid, render deep-cell foundation little more than a wonder in mechanical possibilities.

For the further consideration of this subject see one of Dr. Miller's straws, and the answer thereto, in this issue.

OUR HOMES, BY A. I. ROOT.

> Let there be no strife, I pray thee, between me and thee, and between my herdmen and thy herdmen; for we be brethren.—GEN. 13:8.

I suppose there have been hundreds and may be thousands of sermons preached from this celebrated text, this grand sentiment uttered by that old patriarch Abraham. There have been sermons on the latter part where he says, "We be brethren;" and there have been many sermons also, I presume, on that first part in regard to "strife;" but I am inclined to think I have something to say about strife that has not been said in just the way I want to say it, and very likely many of you will not agree with me—or, let me say, perhaps very many of the "*brethren*" will not agree with me. The children laugh at me because I am so averse to strife about any thing. No doubt the grandchildren will laugh, when they are a little older, about grandpa's ideas in regard to contests. Yes, to tell the truth, judging from more than half a century's experience, I am not in favor of contests of any sort. Now, do not understand by this that I do not believe in rewards, for I certainly do; that is, where a reward is offered to every one who does something meritorious. But I do not believe in setting a lot of people to work (or a lot of children, if you choose), and rewarding one and giving all the others nothing. I sometimes tell Mrs. Root (for she *too* is rather against me), that the prize business is like setting a lot of boys to sawing and splitting wood on a hot July day. They will work hard, every one of them, and yet all the pay for all the wood that is cut is given to just one boy, and nothing to the rest. Some of the larger ones say the rest *do* get something—they get exercise, and acquire skill by the effort to win the prize. But, dear friends, can not the boys get exercise, and acquire skill, and have pay for the work done, just the same as other people get, either boys or men?

But this is not just the point I have most at heart. There was strife between the herdmen of Abram's cattle and the herdmen of Lot's cattle. Hired men are ever ready to get into strife. They like the fun of it. It is a kind of excitement that varies the monotony of the dull routine of hard work; and when they get into such a strife each side is very loyal to its employer—that is, the contestants think they are, just as our soldier boys were very loyal to Uncle Samuel when the war broke out with Spain. Was it altogether patriotism, or was it not somewhat a craze for entering into strife for seeing who could beat or win? I do not think I am stubborn or obstinate in the matter, but I really can not conscientiously take part in any thing when it begins to be evident there is a strife to see who will beat or who will come out ahead. Of course, it does not always assume the bitterness and hatred that we see—well, say in horse racing. Once in my life I was asked to be judge in a horse-race. I saw the faces of the contestants. From their actions I caught a glimpse of the fierce spirit that stirred them—a spirit that would impel them to kill the horse, or even kill themselves, rather than be beaten by the man they hated. When I innocently and honestly announced the decision of the judges, the losing man called me the worst names, coupled with oaths and curses, that his angry tongue could get hold of. I do not see how I can any longer be a follower of Christ Jesus, and take part in any such contest or strife, if that is a better word.

Some of the young ones may say, "Why, Uncle Amos, you are getting to be too old for such things. If you feel as you do, we will excuse you; but can we not, each of us, do as we think right in such matters?" Of course, you can do as you think right; but when you say I am too old I fear you are making a mistake. Let me illustrate: A bright little niece of mine once said, "Why, Uncle Amos, why not let everybody do as he likes about going to circuses? If you do not like circuses, don't go; but why not let those of us who do like them go with other people?"

"Why, my dear friend Mabel, I do like circuses just as well as any of you children. I should greatly enjoy seeing a great part of the performances this afternoon. In fact, it has always been hard for me, when circuses come around, to think that I could not consistently go with other people."

"Why, if that is true, *why* don't you go with the rest of us? I am sure I would if I *wanted* to"

I do not know just what I replied to this last, but I might make a reply something like this:

"Dear young friends, do not for a moment think I have no enjoyment in, or, if you choose, longing for, things I feel compelled to decide are not best. Why, to tell the truth I frequently have great longings for a glass of lager beer—not only a glass, but I should like a whole pitcherful. If it were not wicked, and it would not trouble my conscience, I do not know but I would give half a dollar willingly for all the lager beer I wanted to drink. I am ashamed to say it, but I want you to know that I am human. I am just like other people. I need not tell you why I do not drink the beer. When I see the awful wreck and ruin that it is making, not only here at home, but in every part of the world, I can not think of touching a drop of it, no matter how badly I want it; and I am heartily ashamed of that old appetite, started before I was 25 years old, that clings to me still." But this is only *one* of the crosses the Christian is called on to bear; and when he considers that he is bearing it for the dear Savior's sake, or, if you choose, for the wives and mothers and the little ones throughout the land, then it should become a glad and *joyous* cross-bearing.

But we are getting away from the matter of strife. I digressed in order to explain to you that in my veins there is a craze for contest and a craze for strife. Why, it was not many months ago that I endangered my life just to let a man and his daughter know that I on my wheel could run away from a smart high-priced horse. I said in pleasantry that I guessed I would go ahead and get out of the dust; but the young lady said, in the same strain of pleasantry, "Father, just let him see he can not get out of the dust quite so easily." Before I knew it a crowd of people had gathered, and they were watching us. I had the pleasure of feeling myself the victor. Had the horse been able to crowd me harder I should have undoubtedly gone beyond the limit of my strength without realizing what I was doing, for my poor foolish heart was filled with strife. Reason, good sense, Christianity, and every thing sacred and holy were for one brief minute crowded out of sight. As I lay on the lounge at my sister's, panting for breath, and fearing I had hurt myself, I asked God to forgive me, and decided then and there, God helping me, I would henceforth beware of strife and the mania for coming out ahead. Is not that sense and reason? Whenever any thing comes up in the way of amusements where strife is going to figure, I feel it my duty to urge caution at least. If you think I am wrong, let me give you a test. The next time you really get into some strife to beat, stop long enough to ask yourself the question if you are not hoping your opponent will have some bad luck. Would you feel bad if his horse should break? or if it is a base-ball game, would you be really sorry for a mishap that would throw the victory your way?

Since I have practiced this sort of self-examination I have often been obliged to pray in real anguish, "O Lord, help me to get this wicked feeling out of my heart. Help me to *love* my enemies. Help me to *bless* them that curse me, and to *pray* for them that despitefully use me." I *am* trying to love *even* my enemies; to have kindly and unselfish feelings toward those who despitefully use me, even though they persist in it. I *am* trying to wish well to all those who are trying to beat me and to come out ahead. May God help me in this *tremendous* undertaking; and may he bless the words that I am writing to you now when I am trying to encourage you to *avoid* strife. I have heard about pleasant, good-natured contests. Well, if you can enter into a contest, and feel all along just as well pleased to have your opponent come out ahead as to do so yourself, well and good; but, dear brother and sister, beware of the selfish spirit — the spirit that would prompt you to crowd somebody else *down*, that you might get *up* a little higher. Strive to cultivate a spirit that rejoices in your neighbor's prosperity and good fortune. Be content to be *second;* be content to take a lower seat than those round about you. Remember the dear Savior's words when he said, "Blessed are the meek, for they shall inherit the earth."

Strife is directly opposed to the spirit of Christ Jesus. It is as far away from Bible teaching as any thing can possibly be. Strife is always selfishness. It admonishes you to build yourself up; and never mind, even if in this building-up you do tear your neighbor down. If any thing is to be divided, strive so as to be sure to get the better half for yourself. In that book called David Harum, that has been so much lauded, David says something like this: "Do unto others as they are continually trying to do unto you; and be sure you do it first." He puts it in horse-jockey language, but the sentiment is the same. The import is, that every man is working for himself, and if you are wise you will work for self also; but the main thing is to anticipate the selfishness of the other fellow. Be selfish first, or, in other words, if you meet somebody who seems to have a disposition to be fair and honest, or even liberal and kind, before he has a chance to show a good spirit exhibit your own evil disposition, and drive out the good spirit by provoking him to be evil also, like yourself. Should such teachings as this have any place in the literature of the twentieth century? Jesus says, "Do good and lend, hoping for nothing again;" "love ye your enemies; do good to them that hate you." He says we are to reprove and correct the selfish spirit we meet by showing kindness and liberality and also unselfishness. Instead of provoking men to selfishness and wrong we are to discourage evil thoughts and feelings by being generous and kind. If a dollar or a dollar's worth of something is to be divided, give your neighbor 60 cents — first, because you love him and delight in seeing him prosper; secondly, because you recognize how *all-pervading* is the selfish spirit, and you want to be on the safe side. Do this where only a dollar's worth is in question; do the same if it is a hundred dollars—yes, even if it should be a thousand; or if there is a deal between you where ten thousand dollars is at stake, let your neighbor, or "the other fellow," as David Harum expresses it, have six thousand dollars rather than four thousand—I mean, of course, in things where there can not be any exact division. You may be the poorer in this world's goods, but you shall have treasure laid up in heaven.

Strife between individuals is a sad thing; but strife between great nations is a thousand times worse. Yes, if strife should be engendered so as to stir up a great war between the United States and China, I might truthfully say it is a *million times* worse than strife between neighbors. Of course, I do not mean that our missionaries should not be protected, nor that other nations of the world should not unite in demanding of China that she make good, so far as she can possibly do so, the outrages she has perpetrated on other nations; but I do mean that there should be no such foolish strife as is just at this time prompting some American people to commence outrages on the peaceful and law-abiding Chinese here in America. There are good people and bad people in China as well as everywhere else in the world; and it would be bad grace for us to demand just now that China must restrain her mobs. Not many months ago the police in our neighboring city of Cleveland were openly defied, for a time, by mob law. Since then this same mob, or the same kind of mob, has still more defied law in St. Louis; and just now we are shocked by the news that in New Orleans a mob of young men, mostly under 21, defied the police force from early in the evening till long after midnight; and in the mean time they put to death a dozen or more colored people for no offense whatever, unless indeed it is a crime to have a black skin. They killed something like a dozen, as I have said, and wounded every negro they came across. A man 75 years old was brutally pounded and shot while he was standing at the door of his own home. An aged colored woman was treated in the same way. I do not know yet what New Orleans proposes to do with the youngsters who overpowered or intimidated their entire police force. In this case the mob was stirred by some imaginary grievance against the colored people. In China the mob became too great for restraint by law, because of a grievance against the foreigners. Rev. C. N. Pond, of Oberlin, Ohio, whom perhaps many of you have heard of more or less, has children and grandchildren in China. He closes a recent kind letter with the following words:

> We have no word from our flock over there since the troubles. They are shut in, at least. We still hope, yet we fear the worst. Can you not show your readers that the Chinese in America are our friends? There are two parties in China—pro-foreign and anti-foreign. These that come to America are pro-foreign. They are on our side. Thousands of their friends in China will fall for us. Many have already. If any one desires to mob the laundryman he should know he is mobbing those who stand for us at home, like the mountain whites in the great war.
>
> July 23. Most cordially, C. N. Pond.

NOTES OF TRAVEL

BY A. I. ROOT.

AN OUTING IN THE MUSKOKA REGION.

The following letter will explain itself:

> *Dear Brother Root:*—Some time ago we wrote you in regard to a trip we had, briefly describing our journey through the lakes and rivers of Muskoka. You said, in reply, that if we contemplated another similar trip to let you know and you would join us if possible. We are now considering another trip to that country, and should be pleased to have you accompany us if you can possibly do so.
>
> Briefly the advantages are as follows: The country is on a high elevation, being on the height of land between Lake Ontario and Georgian Bay. It is cool and pleasant, even in the hottest part of the summer. It is outside the limestone district, and the water is soft. The rocks show indications of iron to a great extent, and this is supposed to impart a tonic to the water. Whether there is any thing in this or not, we can not say; but it is a well-known fact that everybody who drinks it gets what the natives call the "Muskoka fever." This is nothing more serious than a great longing for meal times. Berries and fish are very plentiful in the outlying districts. Potatoes, butter, and milk, can be had cheaply from the settlers, so that the cost of living is very slight. If you wish you can enjoy most of the benefits, and be close to the cottages, where you can get the mail daily. We prefer, however, the wild, unsettled, and, in some cases, unsurveyed, back country, where the fish and the berries are very plentiful, and the only inhabitants at present are the civilized and Christianized Indians. Of course, it is necessary to live in a tent, and travel by canoe in this part of the country. We feel sure a trip of this kind would be a great benefit to you, as everybody who spends a few weeks there improves in health and increases in weight. So noted has this become in that respect that thousands of Americans visit it every summer, as well as people from our own country. The Ontario government has established a sanitarium for consumptives, which has proved very successful.
>
> We think of starting about the end of July, but would try to arrange the time to suit you, should you decide to accompany us. Last year the total cost for a two-weeks' holiday, including every thing, canoe, tent, railway fare from Toronto, provisions, etc., was $15.00 each. It is best to bring plenty of warm underclothing. I myself am not considered very robust, but have never yet taken cold when on one of these trips. I usually take one decent suit of clothes for wearing on the train; two suits of underwear; a cheap strong suit of clothes in which to knock around the bush—a bicycle suit is just the thing (an old one will do); two pairs of boots, cap, etc. We take also a rubber sheet to place on the ground in case of rain, to keep off the dampness. Some take a rubber coat and a rubber life-preserver in case of accidents.
>
> Now as regards Muskoka bill of fare, porridge, fish and berries, milk, and bread and butter form the principal part. We usually take along such things as beans, ham, bacon, biscuits, honey, tea, sugar, coffee, etc.; flour for pancakes; tapioca, rice, evaporated apples, etc. E. Grainger.
>
> Toronto, Can., July 10.

NOTES ON THE WAY, COMMENCING JULY 31.

Our party consists of Mr. Edwin Grainger, Mr. Thomas McKim, and myself. Mr. G. mentioned in his letter "Tommy" as one of his boys who would go with us; but I found Tommy a six-foot man, and not only an expert in the florist's business but very handy in a summer outing.

We left the train at a station called Severn, on the Severn River, a little over 100 miles north of Toronto. At this station we rented a canoe for $3.00 per week, and proceeded to load our tent, camping outfit, etc., into said canoe, which is only about 15 feet long and 3 feet wide in the widest place. Now, it seemed to my unsophisticated ideas that our luggage alone would swamp the boat, letting alone carrying three full-grown men besides; but I tried to have faith in my two comrades, who declared they knew what they were going to do. This boat that was to be our house and home, almost, for two weeks, is almost as smooth as an egg-shell, outside and in, and weighs only about 75 lbs., and cost, I am told, about $30.00. Well, the oars are thin light paddles only about 4 feet long. When Ed informed me we were to get down on our knees in the bottom of the boat, I tried to believe again he knew what he was about; but I think I *did* remark that *that* might do for a boy or young man (or an "oriental") to sit on his "heels;" but he said I would find it all right after a little, and so I did.

There are no seats in the canoe, or what we usually call seats; but there is a thin ash bar, a little above the bottom; and when we rest our knees on a hay cushion on the boat's bottom we sit on this cross-bar, or "thwart," our feet being back under the seat. Each rower has one paddle. One hand is placed on the top of the oar, while it stands straight up and down in the water; the other hand grasps it near the blade, and you pull back. Then set your oar in again, and keep doing so. If I am correct this is the Indian fashion of propelling a boat. An expert will paddle on either side, and without changing, mind you, and make the boat shoot through the water *lively* too.

For quite a little time I was very fearful the boat would dip water and sink with all our valuables; and, come to think of it, I don't know but Ed and Tommy were also fearful for a time, unless I either learned to obey orders or got out and went afoot on shore. While I think of it, the shores of Severn River are about as handsome, with their grassy green borders, as any river I ever saw anywhere. For a time we saw very pretty farmhouses along the banks, and very fair crops of potatoes, barley, oats, rutabagas, etc.; but toward night our river on either side was walled with cliffs of granite rock that had resisted the wash of the water for ages.

I sat as I have described, and paddled for an hour without very much cramp in my knees; but finally I had to change my position.

Mr. G. said this was the case usually the first day, but that nature would soon adapt herself to it, as with the horse, bicycle, etc. After going about eight miles (about two hours paddling), I began to feel somewhat tired; but in undertaking to cross Sparrow Lake, with quite a wind ahead, when we got in the trough of the waves it began to look dangerous. When some water came over into the boat we were obliged to tack and pull pretty lively to keep the boat from rocking. Pretty soon I was agreeably surprised to find one could get a second wind paddling as well as with a bicycle. Sparrow Lake is three by five miles, and Severn River goes into it and then goes out again; and about two miles down from the outlet is a very pretty rapids. The Indians run down these rapids, but very few white people do. The usual way is to unload the boat and carry or drag it over a rocky foot-path. After it is in the water again, the luggage is "lugged" over and put in the boat again. This operation is called "portage," or "portaging the rapids." While looking around close to the portage, Ed uttered an exclamation of delight as he bent over a beautiful tree laden with bright scarlet berries. They were so much larger and finer than any June-berries I ever saw I hardly recognized them. Oh! but weren't they delicious? It seemed to me then and there after our brisk paddling, I never tasted *any* fruit more luscious. The foliage, too, was bright, clear, and thrifty, beyond any cultivated ones I ever saw. I spoke about getting seeds or grafts, but was told I should need the granite rocks and peculiar soil to grow berries like these in Muskoka.

We soon camped for the night, for I, at least, was tired enough, for I hadn't had a nap all day. My big woolen blanket, spread over some odoriferous green shrubs, made a bed as delicious, almost, as the berries. My blanket is labeled "Canada Gray, size 62×82, weight 8 lbs," and price $1.50. Mine is a double (just twice the above), and cost $3.00. Why, that blanket alone makes a nice sleep-place almost anywhere. When I get home I believe I will try camping out with this blanket under the early-apple trees in our dooryard. I firmly believe no bedroom can be ventilated to give all the advantage of sleeping in the open air.

Very early in the morning we tried our new fishing-tackle. I caught the first fish. It was my favorite black bass, and I got it almost as soon as I threw in. Ed and Tommy soon followed with much larger fish, and all black bass. We pulled them out almost as fast as we threw in, and soon I started over the bank for the tent, for more bait; but before I knew it the ground was literally carpeted with *wintergreens*—the brightest and prettiest and most toothsome I ever tasted, even in childhood.

Yesterday some sound gave me a strange thrill. Almost before I could analyze it Ed exclaimed, "Oh! the sound of that 'cow-bell'! how it brings back old memories!" Well, these wintergreens made me feel like a boy again. A little further, and the ground was blue, almost, with huckleberries. Can you wonder that I overheard Tommy say, pretty soon, "I guess *I* had better get that bait"?

Well, out here in the wilderness everybody does just as he pleases. I had some potatoes roasted in the ashes, with a black bass roasted in the same way, and I ate "charcoal and all," even if the rest did look surprised. Tommy *would* keep spilling honey on the dining-room floor (leaves and rotten logs), and Ed *would* be so indecorous as to toss the fishbones over his shoulder.

We don't even have to put away the things; and, unless it rains, we don't even put things in the tent. Campers go off all day, or longer, and leave valuable articles all scattered around anywhere. Why, only last week a party that was to join ours went off and left the camp-fire so a high wind carried it over to their tent, and burned up all their stuff. One of the men left his money in his vest pocket, hanging up in the tent, and I actually saw the charred pocketbook, and charred bank notes. It is the rule all over Muskoka to hold sacred the property in any camp when the owners are away. Nothing is locked up, and no one has ever heard of any thing being stolen. The Indians often come around and examine every thing, for they are very curious; but I can not hear of an Indian that ever stole any thing from a camp. Kodaks, musical instruments, and other very valuable property, are as safe, if miles from any human habitation, as locks and watch-dogs could make them.

On the second day my comrades went off and left me alone on the island the greater part of the day. Like Robinson Crusoe I was "monarch" of all, and, like him, I heard voices indicating other human beings were near. I looked through the bushes, and soon saw a merry party of boys and girls portaging around the rapids, across the bay. Toward night, when we were fishing again, two young men came along on the opposite shore, and seemed to be critically examining the rapids, when one of them said, "Oh! we can shoot *them* all right," and pretty soon down the two came in a canoe just about like ours. It looked like boys coasting down hill, only the boat went over the rushing yielding water faster than any sled. It jumped and bounded in a way that seemed positively awful. Had it touched one of those sharp granite rocks, it would have been only an egg-shell. The boys were experts, and handled their oars with lightning like skill and rapidity. Only a little water splashed over into their boat.

It is quite customary for campers to take along some musical instrument. In the evening I went out in our boat alone by moonlight to learn how to run the boat straight while paddling on only one side. While I was having great fun in learning how, Ed was playing his cornet. The instrument sounds beautifully over the water, and it also lets other campers know there is somebody near. Soon we heard applause from a point across the bay, and, a little later, the two young men who went down the rapids came over for an evening visit. They are students from Buffalo; have made a special study of shooting rapids in different places. One day while my companions were away I went down the rapids near our tent to bathe my foot, for a corn was troubling me. It gave me so much relief I rolled up my pants and began wading on the rocks in the rapids. This was lots of fun, but did not satisfy me, so I stripped entire, and, holding to projecting rocks, let the surging boisterous torrent play all about me. Just at this time Ed and Tommy came suddenly around a point, their boat being carried by an extempore sail made of a piece of burlap. They were somewhat surprised to see the *invalid* of the party apparently in the midst of the rapids, as nude as he came into the world. There is something funny about this. Less than an hour before, I was shivering in the north wind, with my coat all buttoned up around my chin. Well, the same wind was blowing strong when every rag was removed, and yet I was not uncomfortable at all. After the first chill of getting under water was off, I felt like playing in the rapids an hour or two, and have felt better ever since I got such a splendid rinsing with the soft pure Muskoka water.

Ed made a cupboard out of a dry-goods box we found, with a good door to it to keep out the porcupines nights. They are the worst thieves; and Tommy made a beautiful oven one day when Ed and I were out after bread. I said there were no neighbors; but one evening Ed declared he heard the voice of a calf across the woods in a certain direction, and we went on an exploring voyage. We ran up a creek with our boat, until we came to a portage so long and steep (over a hill) that I couldn't carry my end of the boat; but I found a trail, and we pushed ahead exploring for a mile or more, when we found cattle-tracks. After another mile we found fenced fields, and crops and house and barn. Oh how good it seemed to see these evidences of civilization, and "home," even after only a few days in the wilderness! The woods around here are so dense one can scarcely make a mile an hour without a trail. We found red raspberries, huckleberries, and some blackberries, with wild flowers in great profusion. As Ed is quite an extensive florist he could name almost every plant, even in the woods, at a glance. The father and mother were both absent; but the children sold us a loaf of bread for a dime. Oh! but wasn't that bread *good* after our long walk through the woods? The wild red raspberries are the most luscious, or it seemed so that day, of any fruit in the world, as they melt in one's mouth.

After catching more bass, and teaming around all day, the sparkling moonbeams looked so entrancing on the waters of the lake that I took the boat and paddled out in the middle of the water; and while I was out there busy trying to learn the trick of handling the sail in the light breeze that sprang up, I heard a voice from the camp:

"Look here, young man! haven't you had almost exercise enough for one day? Sixty years is pretty well along to be playing 'boy' toward ten o'clock at night as you are doing."

To tell the truth, I had *four* meals yesterday. I was out rowing before sunrise, and got hungry, and took a lunch before the boys were up; then I ate a pretty good breakfast with them, had a big dinner after fishing, and a grand supper after we went after the bread.

Oh! I must tell you about our sail that just makes our boat "hum" when the wind is right. It is only a strip of burlap that Ed says cost just five cents. This is tacked on a stick about a yard long, and hung on a pole stuck in the bow of the boat. Now take one of the lower corners in each hand, and let the cloth bag out over the bow. With a brisk wind, and some one to steer, it will make the boat just plow the water.

HEALTH NOTES

BY A. I. ROOT

Our friends are perhaps aware that for years my constant prayer to the great Father above has been for direction in this matter of health. The great God who created us in his own image certainly has some great, good, and wise intentions for us in this very matter of regaining and preserving health; and although I have often wondered why we were not told more specifically what we should and should not do, I have never lost faith in God. I am sure he has good and wise reasons for leaving us so much, as it seems, in the dark. I have had faith to believe that I should live to see some great progress made in the treatment of disease. Well, during the last two weeks my prayer has been, at least to some extent, answered. When I left home I was hardly fit to start out on a trip. Unless I was exceedingly careful what I ate, my old trouble was very persistent; but in just one short week I regained a degree of health that I hardly ever felt before. My digestion became almost perfect; every ache and pain was gone; catarrh, neuralgia, rheumatism, susceptibility to draft, faintness before mealtime, lassitude, and a tired feeling, had all vanished, and I was a boy again, with boyish appetites, boyish exuberance of spirits, and strength. Now, I do not know just what brought it about; but I will try to describe it for the benefit of others.

In the first place, I was entirely outdoors. For a whole week I did not go inside of any building. When I was tired I lay down in my blanket on the ground, with my face toward the breeze as it came off across the waters, and slept all I wanted to. For a diet we had fish, potatoes roasted in the coals, and berries picked in the swamps and on the hills. I have told you how I learned to paddle an Indian canoe; and I was rejoiced to find that I could reach a "second wind" in paddling a boat just as well as in riding a bicycle. The paddling of the boat gave me exercise through my arms and across my chest that I did not get on the wheel; and all day long I had plenty of time to remember the repeated injunction to fill the lungs clear full of air. I did this again and again, and enjoyed it. Water was so handy that the most of us took a bath every day, and sometimes twice a day. As we were away out in the wilderness we wore but very little clothing, went bareheaded, if we felt inclined to, let the sun strike not only our arms and chests, but we prolonged the bathing time so as to let the sun strike the whole body. Of course, we got tanned and sunburnt; but what was the odds if we got health?

When my comrades were cooking such quantities of oatmeal porridge and other things, I remonstrated because I thought it would spoil before we could all consume it; but they laughingly informed me that things did not "spoil" when out camping. At first I wondered that anybody could eat so much and not be made sick; but after about three days I ate almost as much as any of them, and was not sick either. Again, they made coffee enough for a dozen the way people ordinarily drink coffee. Of course, the coffee was weak; and when I saw my companions drink cupful after cupful, I spoke about so much liquid hindering digestion; but they laughed at me, and pretty soon I too could drink cupful after cupful. In fact, with the amount of food that we ate it seemed as if Nature called for great lots of drink. To my surprise I did not have a headache, nor any indigestion, nor any thing disagreeable. I just felt strong and well, and I certainly have never relished any food in my life as I did in those days. I should certainly have pronounced the potatoes we had in that bag the finest variety for table use I have ever found in the world. Not even the Freemans could compare with them. The boys said they got them at a grocery, and their impression was they were the Early Rose. They were not only dry and mealy, but the flavor was like that of a roasted chestnut; in fact, it was exquisite. By the way, I am going to get a few of those *same* potatoes, if I can, and see if I can grow some that will taste like those we had in camp. We boiled them with the skins on, then poured the water off, and shook them, holding the pail they were boiled in over the fire meanwhile. Like every thing else the bread was certainly the nicest in the world, especially after I had tramped through the bushes, over rocks and hills, about two miles, to find a place where I could buy a loaf of bread. The good woman felt much troubled because the only loaf she had to spare was scorched in baking. She was going to cut off the burnt part, but I begged her not to, telling her that I especially liked bread baked brown or black; then when the boys felt bad because they had overcooked some of the food, I told them I always *liked* things overdone. In cooking some beans, Mr. G. felt bad because he got in so much water that it was bean porridge; but I told him *that* was all right—that I liked bean porridge with lots of water in it; and I told the truth too. The dinner, made of some of that bean soup, bread and butter, the potatoes I have been telling you about, and fried black bass, made the finest dinner I ever ate. Why, it seemed as if I could eat all the afternoon without being satisfied, and I thanked God for such an appetite too, at every mouthful.

Some of you may suggest that I am advising people to make gluttons of themselves. There is another expression referring to swine, but if you will excuse me I will not use it here; but I wish to assure you we were doing nothing of the kind. We came out into the wilderness to get health. We had been having brisk exercise, rowing boats, chopping wood, building fireplaces, rigging up a sail for our boat, and all these things, and were downright hungry. After our big repast we took a nap if we felt inclined, then took exercise of some sort. We had pure air; and, by the way, the air in those regions is more or less scented from the pines and other resinous trees that cover the rocky hills and rocky islands. This resinous air, it is said, has a beneficial effect on the health. If you but think of it you will recognize that we were but getting back to the days of our forefathers. We were out in the wilderness under the shade of the trees. We were Nature's children; and I am firmly persuaded the answer to my prayer came through this experience that I have been giving you. It is not more *druggists* we need, and it is not more *doctors* we need, unless it be the kind of doctors that tell their patients to go away from civilization, and live in the open air.

Am I alone in this discovery of mine? Why, bless your heart, no. Monday afternoon, Aug. 6, by the advice of my two friends I took the steamer trip from Gravenhurst up through Lake Muskoka, Lake Joseph, and Lake Rousseau. The steamer makes its trips daily, stopping at innumerable islands, or wherever a flag is run up announcing that there are passengers waiting. Well, these islands at this season of the year are pretty well peopled with visitors from all over the United States and

Canada, who go there to seek health. The buildings are all summer houses, with great numbers of porches, and hammocks strung out under the trees. People who can afford it, own these cottages and spend the summer months there. They wear the lightest kind of summer clothing, paddle about in boats, play in the water, catch fish, and get rest and recreation. I am just now reminded to say that, during my week in the wilderness, I did not see a daily paper. In fact, I did not get a paper of any kind. When I began to get a little lost for something to read, Mr. G. gave me a large book describing and picturing the wild flowers of Ontario. This book made my rambles over the hills and through the swamps doubly interesting, for I found almost all the greenhouse plants here in their wild state. When it comes to berries, we find June-berries, huckleberries (different varieties), red and black raspberries, blackberries, gooseberries, and even currants, growing wild in the woods. Well, these islands, scattered all through these beautiful soft-water lakes, are covered with evergreens, pines, hemlocks, spruces, and even balsams. Thousands upon thousands of the residents of cities have been making just such a discovery as I have made. They throw off business cares, stop using their brains, cultivate their muscles, and "turn Injun." The native Indians developed muscle and nothing else. The modern American is getting a good way toward developing brain, and forgetting the body.

Now, I am not going so far as some of our modern doctors who say it does not make any difference what ails you, "just come to me and take my medicine, and you will be all right;" but I can truthfully say this: No matter what ails you, you will certainly get great benefit by living outdoors as much as possible. If you can get near a body of water, where you can get the cooling breezes from it, and bathe daily, or twice a day, in pure soft water in unlimited quantities, all the better. Confine yourself for a few days to the work of eating and drinking and sleeping—let every thing else go. Of course, you want some occupation.

Just a word in regard to diet. It does seem a cruel thing to torture the worms and poor fish; and I could make an eloquent appeal for a vegetarian diet. But many people can not stand such a diet. I do not believe we can *learn* to stand it, safely. Just now I would place fresh fish at the head of the meat diets. Our Savior, on at least three occasions, provided fish for the hungry people, and, strangely enough, one of the last things recorded of him was that he ate a piece of broiled fish and some honey; and I can not believe that he made a mistake or that he would be better pleased to have us vegetarians. By the way, I learned to eat honey, with the rest of the boys, with my fish and bread, and that, too, without disturbance to my digestion.

Monday night we arrived at the great hotel at Port Colburn. While it has rooms for over a hundred guests, at the time we were there every room was taken, and they were obliged to put up with cots. I would have gladly taken my blanket, and slept out on the ground, but there were so many stylish people all around I feared it might not be just according to etiquette.

The water in all these lakes is almost as soft as rain water. It is clear and pure; but the number of floating logs, in consequence of the great lumber trade, has given it a rather dark color. It has been suggested that pine roots from the islands may have given it a little color, and, perhaps, in some localities, taste.

The question will be asked, "Are not other pure-water lakes as good as Muskoka, Georgian Bay, Lake Superior, and other northern regions?" No doubt any large body of water tends to cool the air and make it wholesome; but I think the northern regions are greatly preferable because they are cooler. The water never smells bad, and leaves but little or no sediment on the stones. At first I thought I could not stand it to bathe in water so cold; but I was agreeably surprised to find in a little time my body became so accustomed to the cool water that I could bear it all over about as well as we can bear cold water on the hands and face. The invigorating atmosphere certainly must have much to do with it.

I am not through with my explorations in this direction in search of health; and I shall, therefore, have more to tell you about it.

In regard to expense, the railroad companies and boat lines have made exceedingly low rates of travel to favor excursions of this kind. When it comes to daily food, you can buy every thing in Canada as cheaply as anywhere else—oftentimes cheaper. We got big loaves of beautiful bread for a dime. Garden stuff of all sorts is very cheap. If you will get up and dust, your meat food need not cost you any thing, because there are fish wherever there is water. We got all the bass we needed for every meal, and toward dusk we got immense catfish that we threw back into the water, as we had no use for them. When it comes to lodging, if you can scrape up some kind of tent to shelter you when it rains, and a thick woollen blanket to keep you warm, the lodging need not cost you any thing. We met two students from Buffalo, who said they lived cheaper up there in the islands than they could anywhere else. That was one reason for taking a long vacation. Of course, one can not earn any thing unless he goes as guide, or paddles a canoe, or something of that sort.

Now, I am sure, dear friends, that most of you can profit more or less from these suggestions I have given you; and it will be cheaper in many ways than to take stuff that you get at the drugstores, and far cheaper than to employ expensive doctors. Go back to Nature, and let *her* be your physician.

MAYWOOD, ILL., NOT AN INTEMPERATE TOWN.

Mr. A. I. Root:—Will you please refer to page 586, GLEANINGS for July 15? As a resident of Maywood I wish, in a friendly way, to take exceptions to the remarks you make in that article about our village. I have lived in Maywood for the past twelve years, and for all that time we have maintained a strict prohibition district. There is not now, and never has been, a saloon within the corporate limits of Maywood.

Please do not hold the people of Maywood responsible for conditions in territory entirely beyond their jurisdiction. When you "turned to go east about a mile," you left Maywood before you crossed the bridge over the Des Plaines River; and when you crossed that bridge you entered Harlem, a "wide-open" district with its own village government. If you will please set this matter right in your next issue you will retain the friendship of the bee-keeping portion of the inhabitants of Maywood, a village which *does not* build its roads with profits from the beer business.

Maywood, Ill., Aug. 7. G. S. CREGO.

Most gladly, friend C., do we give place to your kind letter of correction. As the locality was pretty well settled up along the street-car line I did not exactly understand where Maywood ended and something else commenced, and I did not intend to convey the idea that this locality I struck belonged to Maywood. If I left that impression I heartily beg pardon. But that place called Harlem deserves, I am sure, all the criticism I made. If anybody thinks I exaggerated, let him take a trip down that way, and go into the saloons there, as thick as they can be planted, for quite a distance. Let him interview the people in charge, and see if I reflected too severely on their general intelligence.

PROGRAM OF THE THIRTY-FIRST ANNUAL CONVENTION OF THE NATIONAL BEE-KEEPERS' ASSOCIATION.

To be Held at Chicago, Illinois, Tuesday, Wednesday, and Thursday, August 28, 29, and 30, 1900; Sessions to be Held in Wellington Hall, 70 No. Clark Street.

TUESDAY EVENING.

Call to order at 7 o'clock.
Song, - - - - Dr. C. C. Miller, Marengo, Ill.
"How to Sell Honey," S. A. Niver, Auburn, N. Y.
"Bee-keeping in the City," L. Kreutzinger, Chicago.
Question-box.

WEDNESDAY MORNING.—9:30.

Song.
Invocation.
President's Address, - E. R. Root, Medina, O.
"Queen-Rearing by the Doolittle Method," - - - - - Mrs. H. C. Acklin, St. Paul, Minn.
Question-box.

WEDNESDAY AFTERNOON.—1:30.

Song.
"Bee-keepers' Rights and Their Protection by Law," - Herman F. Moore, Park Ridge, Ill.
"Trials of the Commission Man." - - - - - - - - - - R. A. Burnett, Chicago, Ill.
Question-box.

WEDNESDAY EVENING.—7:30.

"Breeding for Longer-tongued Bees," by J. M. Rankin, of the Michigan Experiment Station.
"Bee-keepers I have Met and Apiaries I have Visited," by E. R. Root, assisted by Dr. C. C. Miller, Dr. A. B. Mason, E. T. Abbott, and others. Illustrated by a stereopticon.

THURSDAY MORNING.—9.30.

Song.
Invocation.
"Various forms of Disease Among Bees, Cause and Cure," Dr. Wm. R. Howard, Ft. Worth, Tex.
Report of General Manager, - - - - - - - Hon. Eugene Secor, Forest City, Ia.
"Pure Food Legislation," - - - - - - - - - - Rev. E. T. Abbott, St. Joseph, Mo.
Question-box.

THURSDAY AFTERNOON.—1:30

Song.
"Chemistry of Honey, and How to Detect Its Adulteration," by Thomas Wm. Cowan, Pacific Grove, California.
"How to Ship Honey to Market, and in What Kind of Packages," - Geo. W. York, Chicago, Ill.
Question-box.

THURSDAY EVENING.

"Co-operative Organization Among Bee-keepers," - - - - - - R. C. Aikin, Loveland, Col.
"My Trip Through Wisconsin and Minnesota," W. Z. Hutchinson, Flint, Mich. Illustrated by a stereopticon.
Unfinished business.

One prominent feature of the next convention will be the stereopticon work. Messrs. Root and Hutchinson, with a powerful stereopticon, will project upon the screen some photos they have taken of apiaries they have visited in various portions of the United States. The convention will be held in Wellington Hall, 70 North Clark St., about a block and a half from the office of the *American Bee Journal*, and about five blocks directly north of the Court-house. The hotels at which delegates may secure lodging is the Revere House, about half a block from the convention hall. The rate for lodging will be 50 cts. per night, and the proprietor has assured Mr. York that good beds are provided, but that several will have to occupy the same room. But when any one desires a room with a single bed, the charge will be $2 00 per night. If two men wish to take a single room in that way they can do it, sharing the expense between them. G. A. R. people will have to pay 75 cts. per night for a single bed, so bee-keepers are specially favored at 50 cts. The hotel is almost within a stone's throw of the convention hall, and right near the hall are first-class restaurants where meals can be secured at reasonable rates.

Chicago is a central point, and there will undoubtedly be a large attendance; and, considering the attractions, it is earnestly hoped that bee-keepers will turn out in good strong force.

E. R. ROOT, President.
DR. A. B. MASON, Secretary.

Just as we go to press, Dr. Mason wires as follows:

All roads in the United States and Canada, one cent a mile each way to Chicago. A. B. MASON.

Toledo, O., Aug. 13.

INDIA RELIEF FUND.

Geo. Shackelford, Okalona, Ark	1 04
Mrs. Warner, Medina, O	1 00
Friend	1 00
Sarah Fisher, Randolph, O	1 00
J. Mattson, Atwater, O	2 00
Lizzie Hurley, Mt Carrol, Ill	1 00
Seward Steffy, Stewartsville, O	1 00
Cora M. Howard, "	50
O. Jane Gardner, "	25
C. S. Jacobs, "	25
Jacob Tanner, "	25
Mary Tanner, "	25
Ada McDonald, "	15
Wallace Kasler, "	25
Wash Kasler, "	50
Amos Soon, "	50
Mort Roberts, "	10
Kellar Baker, "	25
Mae Steffy, "	25
J. Steffy, "	25
E. W. Koon, "	25
Silas Johnson, Graysville, W. Va	1 00
R. C. Clary, Ft. Morgan, Colo	1 00
Frank Ellis, Monroe, Wis	5 00
A Friend	5 00

BEE-KEEPERS AS A CLASS, ETC.

I find bee-people the nicest folks I have ever met. I have yet to come across one who does not acknowledge God; and I met with a great many bee-men in England, including the genial editor of the *British Bee Journal*; and the warmth and geniality of all are very refreshing. Then as to yourself, though I have never seen you, yet one feels he knows you well. For years "Our Homes" in each number has been about the first thing we read; and if all the preachers gave such common-sense talks to the people there would not be the infidelity and skepticism there is at the present day. You aim straight at the mark, and hit. If I fail in bee-keeping my wife would not let me do without your paper, for your rambles as well as sermons are good—in fact, all is good; and when I come home with mail, and they see GLEANINGS, it is "Oh! let me see first what Bro. Root has to say now."

Lucknow, Ont., Can. G. W. CATER.

HIGH PRESSURE GARDENING BY A. I. ROOT.

THAT WHEAT WHICH DID NOT WINTER-KILL, AND WAS NOT AFFECTED BY THE FLY.

Our yield was pretty nearly 40 bushels to the acre, and nearly two tons of straw to the acre. The rye straw brought $5.00 a ton, baled, and the wheat straw $4.50. I received for the wheat 81 cts. per bushel, and 62 for the rye. You may remember that I ascribed my success to underdraining, and enriching the ground by turning under clover—that is, the clover was turned under for potatoes, and the wheat was grown after the potatoes. It has been suggested, however, that the immunity I enjoyed from the fly might be owing to the fact that there is no wheat grown very near my own. Many farmers called it the best wheat in the county, and I did not see any that was better on my wheel-rides throughout the State. The variety was the Fultz. The seed was furnished me by a dealer in seed wheat. The crop was grown for him.

HOW TO KEEP NEW POTATOES FOR TABLE USE, ETC.

Mr. A. I. Root:—Will you kindly inform me in regard to the best methods for keeping new Irish potatoes—that is, those dug in July and August?

St. Elizabeth, D. C. W. W. Conner.

If you are not needing the ground where the potatoes grew, I do not believe there is any better way than to dig them just as fast as you use them, and no faster. If the ground is cracked, or any of the potatoes are exposed, shovel dirt over them to keep the sun from greening them. If, however, you want to use the ground, put them in the coolest, dampest, and darkest cellar. If you have no cellar, put them in some sort of box or room that can be opened cool nights and closed and shaded perfectly during hot days. They must be kept damp to keep them from wilting, and they must be kept in the dark to keep them from getting green; and they must be kept as cool as possible to prevent them from drying up by the heat. Almost any cellar will do if you put the potatoes right on the ground, and cover them with something so they will be perfectly in the dark; then open the cellar cool nights, and close it during the daytime and during hot nights.

WHAT TO PLANT IN THE MIDDLE OF AUGUST.

Wax beans will still be all right, also all of the onion-sets mentioned in our July 15th issue. Turnips will probably get large enough for table use; in fact, they are very much better where they are not too large. Scarlet clover will be all right if we have rain; buckwheat will make honey, even if it does not ripen the grain. For prices of all the above see page 554 of our July 15th issue. This is just about the right time to sow the new forage-plant, dwarf Essex rape. Here is what Wm. Henry Maule says about it in his advertisement:

> A forage plant of the very highest value. It makes quick and large growth (about three feet) smothering out all weeds and objectionable grasses. It may also be plowed under as green manure. In six weeks from time of sowing, sheep, hogs, or cattle can be turned on it. An acre of rape will pasture 12 to 15 sheep six to eight weeks. In the North it can be sown any time from May to September, but in the South it should not be sown until September or October for fall pasturage. It is perfectly hardy, withstanding drouth, and a sure cropper on all kinds of soil. Sow 5 lbs. to the acre broadcast or 3 lbs. in drills.

I do not know but the above is rather strong, although I have seen it do all he claims, under favorable conditions. The demand for the seed seems to increase every year.

MULCHING TOMATOES WITH STRAW.

Yes, I have practiced mulching tomatoes with straw for years, for two reasons—to keep the fruit clean, and to keep the plants from drying up in the hot summer weather. A neighbor of mine says she does the same. I use straw or grass cut out of my apiary. I place it around the vines when they begin to fall over. Trellising tomatoes is recommended to keep the fruit from rotting. Several years ago, when tomatoes rotted so badly all over the country, I had two rows, side by side. The one, I trellised; the other lay on the ground. I do not remember now whether I put straw under the vines on the ground that year or not; but this I do remember distinctly, that those on the trellis rotted just as badly as those on the ground, and I have had them rot, too, when tied to stakes. Neither of these methods was a preventive with me. Nothing suits me as well as the straw mulch.

Macedon, N. Y., June 23. A. Jennie Wilson.

Humbugs and Swindles.

We have just received a press bulletin from the Ohio Experiment Station, which reads as follows:

> A WARNING AGAINST FRAUD.
>
> The Ohio Experiment Station has just received the following letter from Marion County:
>
> "There is a company of men canvassing this territory for fruit-trees. They are putting in what they call a 'model orchard.' They claim to be working directly for and in the interest of your station, which gives them quite a leverage with a great many farmers."
>
> To this letter we reply that this Station sells no fruit-trees of any description; and all persons who claim to represent it in the manner indicated are swindlers, and should be arrested for obtaining money under false pretenses.
>
> Ohio Agricultural Experiment Station,
> Chas. E. Thorne, Director.

This is not the first time that unscrupulous rascals have used the names of different experiment stations to further their frauds. Will everybody who gets track of this thing assist in having them arrested, and punished to the full extent of the law?

SPECIAL NOTICES BY BUSINESS MANAGER

HONEY.

Do not forget that we are in the market for honey. Let us know what you have to offer.

DISPLAY CARDS.

Did you see our announcement of these in last issue? Ten cards, 6½x8½, just right to put in every store where your honey is sold, sent postpaid for 10c. Not less than ten furnished.

SHIPPING-CASES.

Do not forget that you will hurt the sale of your honey by using old or untidy cases. Get our no-drip cases, and secure the best prices for your honey.

WINTER CASES.

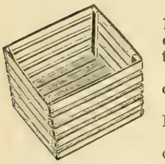
It is none too early to begin your preparations for winter. Have you ever thought how many pounds of honey are required extra because you do not provide suitable apartments for your bees? Why not try our winter-cases, or some of our dovetailed chaff hives? If you have mislaid our catalog, send for another and see how little it will cost to put your bees up in proper shape.

SQUARE CANS.

We have on hand a good stock of both one and five gallon square cans at the following prices:

No. in a box.	Capacity of each can in gallons,		in honey.	Price of 1 box.	10 bxs.	Wt. of 1 box.
1	5-gal.	can boxed	60 lbs.	$ 50	$ 4 60	10 lbs.
2	5-gal.	"	60 "	85	8 00	15 "
10	1-gal.	"	12 "	1 60	15 00	20 "
12	½-gal.	"	6 "	1 60	15 00	20 "
24	¼-gal.	"	3 "	2 60	25 00	25 "
1	1-gal.	"	12 "	13 00	120 00	110 "
1	½-gal.	"	6 "	11 00	100 00	80 "
1	¼-gal.	"	3 "	9 00	80 00	60 "

BUSHEL BOXES.



Owing to advance in price of lumber we were obliged to advance our price on bushel boxes some time ago to the following:

All slatted bushel-box, per crate of 15, $2.10.

Slatted bushel box, per crate of 12 $1.80.

Galvanized bound bushel box, crate of 12, $2 40. Price each, nailed, 18, 20, and 25 cts. respectively. Nothing handier for potatoes, apples, and many other things than these boxes, and the cost is very little for any thing so useful.

CALIFORNIA MOUNTAIN SAGE.

We have now a new supply of fresh seed of both black and white sage, received direct from California, which we shall be glad to mail in five-cent packages, or at 35 cts. per ounce. It is easy to grow, and bears a great profusion of very pretty flowers, and succeeds nicely with garden culture. While there are but few localities where it will probably pay to grow the plant especially for honey, it is worth something as a curiosity to have a plant growing in your garden that produces the finest and whitest honey in the world. The friends who have learned to grow flowers in the window or in the greenhouse will have no trouble in getting a nice lot of plants from five cents' worth of seed.

A MISTAKE OF ONLY $100 IN THE DAY'S RECEIPTS.

In GLEANINGS of July 15, a mistake of $100 was made in the letter friend Terry sent you—only $10 a day instead of $110. C. VANDERBILT.

Alloway, N. Y., July 20.

Friend V., there was some difficulty in making out the figures; but as we did not know how big a strawberry-farm you had, we did not know but the larger figure was right. But even $10 a day is a good beginning.

Best on Earth! A queen I had from you lived 3 yrs., and was the best queen I ever had, and did not swarm.—E. W. Brown, Morton Park, Ill., July 30, 1900.

Three select breeding queens, $2.75.

Henry Alley, Wenham, Mass.

Closing Out, 200 Queens.

In order to close out till Sept. 15th I will sell my queens, golden and leather-colored, at bottom prices: 1 queen, 50 cts.; 3 for $1.25; per dozen, $5.25. Tested, $1.00. Breeding queens, $2 50 to $5.00. Send in your orders promptly. G. ROUTZAHN, Menallen, Pa.

The Influence of Locality.

This matter of locality and the part that it plays in bee-keeping is really becoming a chestnut; but it needs cracking just the same. Anything in the nature of a paradox, or that appears mysterious, is at once charged up to locality. In many instances the inference is correct. To illustrate: Holy Land bees are not liked here at the North. They are great breeders. So long as there is honey in the hive they will keep on rearing brood. We don't wish any such characteristics here in the North. When the harvest is over we wish breeding to stop. We don't care to rear a horde of useless consumers. In the South, in Cuba, for instance, the harvest comes in the winter, or what corresponds to our winter, and it is very desirable that the colonies be populous at that season of the year. To accomplish this, Holy Land bees exactly fill the bill. Thus, you see, in one locality one strain of bees is desirable, but another is not. In some other locality the conditions are reversed. Again, here at the North, where our main harvest comes early and is of short duration, small brood-nests are desirable. In the South, or where the harvest is prolonged through the whole summer, large brood-nests find favor. Then there is the wintering problem that is ever with us here at the North. In the South, chaff hives, bee-cellars, and the like, are of no interest whatever. California and Colorado have conditions and sources of honey-flow that are entirely different from those of Michigan and Canada. The fundamental principles of bee-keeping are ever the same, but localities differ; they differ so much that a bee-keeper going from Michigan to Cuba, or to Texas, and attempting to carry on bee-keeping as he has done at his old home, would be sadly left.

In reading our bee-journals, and attempting to profit by the advice they contain, we should ever have in mind this matter of locality. The experience and views and advice of Mr. Doolittle may be all right for New York, Ontario, and Michigan, and some of it may be all right for Florida or California, but not all of it.

Then there is another point: The more thoroughly a man understands his own locality, the greater his chances for success. He must know at exactly what time in the season to look for the different honey-flows. It may seem incredible, but I have had bee-keepers come to me to buy sections, come in great haste, and a heart filled with enthusiasm; the bees were "just piling in the honey" and the owners had only discovered it, and the *basswoood honey harvest was coming to a close.* These men did not even know *where* the honey was coming from. Of course, this is an extreme case, but not so very extreme as some of you may think. A man ought to know what strain of bees to keep, what size and kind of hive and fixtures to use, when to take his bees from the cellar, if he winters in the cellar, whether to protect them on the summer stands when he takes them out, and, if so, in what manner, whether to feed in the spring, whether to unite before the harvest, whether to shade his hives and how, when to put on the sections, and so on through the whole season, he should know, as nearly as it is possible for him to learn, exactly what is best adapted to his particular locality. In reading articles in the bee-journals he should always ask himself: "Does this apply to my locality?"

To the one who will send me the best article on this subject, between now and September 1, I will send $5.00 in cash. To the writer of any article, not the prize article, that I think well enough of to publish, I will send a queen of the Superior Stock and the Review for one year.

W. Z. HUTCHINSON, Flint, Mich.

Say! Improve Your Bees.

Did you know that we are rearing golden Italian queens from our famous $100 breeder Victoria? Stock unsurpassed for beauty, gentleness, and honey-gathering. Queens very prolific; bees do not crowd brood-nest with honey; swarm very little, and enter supers readily. Also 3-banded queens from our fine breeders, Jewell and Beauty. Stock hardiest, gentlest, and best strain in the world. Prices, either race for the rest of the year, unt., 75c; 6 for $4.25; select warranted, 25c extra. Tested, $1.25. Holy Lands same price. Special discount in quantities. Circular free.

O. P. HYDE & SON, Hutto Texas.

We give free sel. test. queen for every $10, and a fine breeder for every $25 worth of orders at circular prices.

H. G. Quirin, the Queen-breeder,

is, as usual, again on hand
with his improved strain of

Golden Italian Queens.

Our largest orders come from old customers, which proves that our queens give satisfaction. We have 12 years' experience breeding queens; no bee-disease in our locality; queens are sent promptly by return mail, with safe delivery guaranteed.

PRICE OF QUEENS AFTER JULY 1:

	1	6	12
Warranted............	$ .50	$ 2.75	$ 5 00
Selected, warranted............	.75	4.00	7.00
Tested	1.00	5 00	9.00
Select tested............	1.50	8.00	
Extra selected tested—the best that money can buy............	3.00		

ADDRESS ALL ORDERS TO

H. G. QUIRIN, Parkertown Erie County, Ohio.
Money-order office, Bellevue, O.

MORE STRONG TESTIMONY

in Favor of

Moore's Strain of Italians

On page 436 of GLEANINGS for June 1, 1900, "Uncle Lisha" says:

"I was talking not long ago with one of the most enterprizing bee-keepers of our State, who has hundreds of colonies. He told how he had bought queens from a number of queen-breeders. Some had been quite worthless, while others were valuable. From one breeder he thought he had the best working bees in his yards. He had introduced several of these queens, which had proved the most industrious bees he had."

"'How about swarming?' I inquired.

"He said he had never if I remember rightly, had a hive of these bees swarm."

I am happy to state that I am the breeder to whom "Uncle Lisha" refers in the above extract, as I have just received a letter from him to that effect. Such disinterested testimony as this is very encouraging to me indeed, and is certainly very convincing. It has taken years of patient labor in selecting and crossing to produce such stock as this.

Warranted queens, 75c each; 6, $4 00; 12, $7.50. Select warranted, $1.00 each; 6, $5 00; 12, $9.00. Strong 3 frame nucleus, with warranted queen, $2.50. Safe arrival and satisfaction guaranteed. Circular free.

I am filling all orders by return mail, and shall probably be able to do so till the close of the season.

J. P. Moore, Lock box 1, Morgan, Pend. Co., Ky.

The Modern Farmer and Busy Bee.

Emerson Taylor Abbott, Editor.

A live, up-to-date Farm Journal with a General Farm Department, Dairy, Horticulture, Live-stock, Poultry, Bees, Home and General News. The Editor has had practical experience in every department of farm work. To introduce the paper, it will be sent to New subscribers one year for 25c. Sample copies free. Best Advertising Medium in the Central West. Clubbed with *Gleanings* for $1.00.

ADDRESS

Modern Farmer, St. Joseph, Mo.

Our Bees are Busy

now carrying loads and loads of pollen and sweets from the flowers to raise the thousands of new bees for the coming honey crops. We are busy with the orders for Hives, Sections, Foundation, Comb to enable the bees to spread themselves over a surface for rapid work.

Many implements and fixtures to help the people to handle the bees conveniently and with profit.

Drop us a postal card and we will send a catalog of the best and latest Bee-hives, etc.; contains also instructions for successful managing of bees for profit.

: : ROOT'S : :

ABC OF BEE CULTURE

If interested in buying groceries, ask for our wholesale list, and it will also be mailed.

We have sold several carloads of Root's hives and supplies, and can make you the best prices for quantity ordered besides a saving of freight in points adjacent to Evansville.

ADDRESS

Vickery Bros., Evansville, Ind.

WHOLESALE GROCERS.

Marquette, on Lake Superior,
is one of the most charming summer resorts reached via the Chicago, Milwaukee & St. Paul Railway.

Its healthful location, beautiful scenery, good hotels, and complete immunity from hay fever, make a summer outing at Marquette, Mich., very attractive from the standpoint of health, rest, and comfort.

For a copy of "The Lake Superior Country," containing a description of Marquette and the copper country, address, with four (4) cents in stamps to pay postage, Geo. H. Heafford, General Passenger Agent, Chicago, Ill.

Root's Goods in Kansas.

Carl F. Buck, Augusta, Butler County, Kansas.

D. COOLEY,

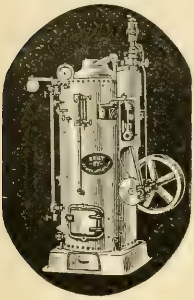
Dealer in **BEE-KEEPERS' SUPPLIES,**
KENDALL, MICH.
Root's Goods at Root's Prices. Catalog free.

Albino Queens. If you want the most prolific queens; if you want the gentlest bees; if you want the best honey-gatherers you ever saw, try my Albino queens by return mail. Untested, 75c; warranted, $1; tested, $1.25.
J. D. GIVENS, Lisbon, Texas.

QUEENS of the Doolittle Case strain. These bees are industrious, prolific, and gentle. Try them. Untested, 50 cts. each; $5 00 per doz.; select, 75 cts.; young tested, $1·00, or 3 for $2.50; select tested, $2.00.
GEO. VANDE VORD, Daytona, Fla.

WANTED. — To sell Belgian hares for breeding meat rabbits. Send for prices.
WESLEY C. FOSTER, Boulder, Col.

THE BOXERS OF CHINA
are attempting to solve a gigantic problem, but they are going about it in the wrong way and will never succeed. Some people in this country seem to think that they have as great a puzzle on their hands in selecting a location for a home. They will certainly go about it in the wrong way unless they inspect the beautiful farming country on the line of the Chicago, Milwaukee & St. Paul Railway in Marinette County, Wisconsin, where the crops are of the best, work plentiful, fine markets, excellent climate, pure soft water; land sold cheap and on long time. Why rent a farm when you can buy one for less than you pay for rent? Address C. E. Rollins, Land Agent, 161 La Salle St., Chicago, Ill.



A FARM POWER
IS A NECESSITY
in the practice of modern agriculture. They're needed for shelling corn, grinding feed, cutting fodder or ensilage, separating cream, woodsawing, pumping water, and a host of other things.

LEFFEL ENGINES and BOILERS
are clearly the best for the purpose. Either Upright or Horizontal; from 3 h. p. up. Safe, simple, easy to run. They're quick steamers, and need little fuel. Pamphlet with prices on application, stating power wanted.

James Leffel & Co., Box 89, Springfield, Ohio, U.S.A.

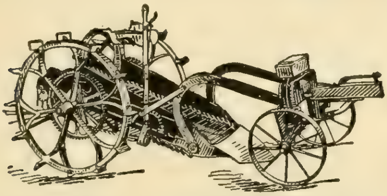
In writing, mention Gleanings.

BLOODHOUND PUPS.

For sale, some thoroughbred bloodhound pups. Their mother was the granddaughter of Perry Phipps' celebrated dog "Jude." Their sire, "King George," is one of the best dogs in the South to-day.

W. K. James, Loudon, Tenn.

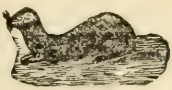
DON'T DIG Potatoes by Hand.
It is a slow and expensive way. The cheapest, quickest, and easiest way is to **USE THE IMPROVED**



Dowden Potato-digger.
It gets them all, no matter how deep or shallow. Our book explains how. The book is free. Write for it now.
DOWDEN MFG. CO., Box 23, Prairie City, Iowa.

In writing, mention GLEANINGS.

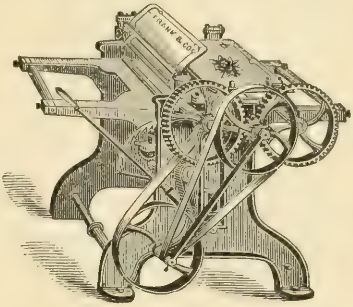
American Poultry... Journal. 25c 1 Yr.'s Trial Subscription 25c
AMERICAN POULTRY JOURNAL,
— Room 500 —
325 DEARBORN STREET, CHICAGO.



1200 FERRETS FOR SALE. Small, medium, and large sized; some trained. **First-class** stock. New price list free
N. A. KNAPP,
Rochester, Lorain County, Ohio.

ELECTRIC HANDY WAGONS
excel in quality, strength, durability. Carry 4000 lbs. They are Low priced but not cheap. **Electric Steel Wheels**—straight or staggered oval spokes. Any height, any width of tire to fit any wagon. Catalogue FREE.
ELECTRIC WHEEL CO., Box 95. Quincy, Ills.

In writing, mention Gleanings.



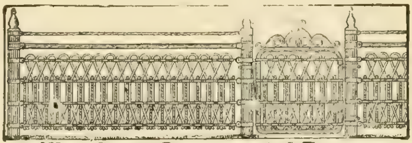
PLANERS

The above cut shows one of our small Planers, of which we make twelve different styles and sizes. Also large Planers, Band Saws, Buzz Planers, Moulders, Wood Lathes, and all kinds of

WOOD WORKING MACHINERY

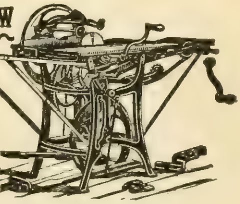
Send for Catalogue.

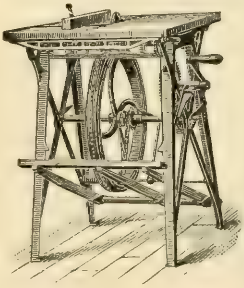
The FRANK MACHINERY CO.
BUFFALO, N. Y.



Kitselman Ornamental Fence.
Excels in strength, beauty and durability. Made of steel and iron. Cheaper than wood. 50 Designs. Catalog free
KITSELMAN BROS, Box 51 Ridgeville, Ind.

Union Combination Saw
For Ripping, Crosscutting, Rabbeting, Mitering, Grooving, Gaining, Boring, Scroll-sawing, Edge-moulding, Beading. Full line FOOT and HAND POWER machinery. *Send for catalog A.*
SENECA FALLS MFG. CO.
44 Water St., Seneca Fs., N. Y.





Barnes'
Hand and Foot Power
Machinery.

This cut represents our combined circular saw, which is made for beekeepers' use in the construction of their hives, sections, boxes, etc. ***Machines on trial.*** Send for illustrated catalogue and prices.
W.F.& John Barnes Co.,
545 Ruby St.,
Rockford, - - Ill.

Our Fall Specialties

Shipping-cases for Comb Honey.
Five-gallon Cans for Extracted Honey.
Danz. Cartons for Comb Honey.

Cash or trade for Beeswax. Send for Catalog.

M. H. Hunt & Son, Bell Branch, Mich.

SEE THE POINTS!

I have had fifteen years of experience in producing honey and rearing queens; and I am breeding queens from a queen procured last spring from J. F. McIntyre, of Sespe, California. He describes this stock on page 12 of Gleanings for Jan. 1st, as filling the supers when other colonies were actually starving. The drones in my yard are from excellent stock—such as that of J. P. Moore, of Kentucky. I rear queens by the Doolittle method, send them by return mail, and guarantee safe arrival, purity of mating, and satisfaction, at 50 cts. each, in any quantity. Money refunded if queens are not satisfactory. Send for circular.

L. H. ROBEY, Worthington, W. Va.

NO KINGS, BUT BEST QUEENS FREE!!

Queens of superior strains, unsurpassed for prolificness and business. This means beauty and all combined. To introduce them I cut prices and allow premiums. For next 30 days I offer untested at 50c each; select untested, 75c; tested, $1.25; select tested, $1.50; No. 1 breeders, $3 00; No. 2, $2.00. Safe arrival guaranteed. For $5 00 order, one untested free; for $10.00 order, one tested free; $15.00 order, one No. 1 breeder free. Send for special price list and premium offer.

Porter A. M. Feathers, Oak Hill, Fla.

WHAT MORE?

Warranted queens with me means *good, prolific, purely mated* queens that give gentle bees that are good workers; if not satisfactory, replaced free. J. W. Hartman, Pickens, W. Va., writes: "You send me the best queens I ever had." One warranted queen, 60 cts.; 3 for $1 50 Select, 80 cts.; 3 for $2.25. Ordinary tested, 75 cts.; select queen, tested, $1.00; extra, $1.50; best, $2.00 upward. See late ads. and circulars.

J. B. CASE, Port Orange, Fla.

REMOVED!

EARLY QUEENS. W. H. Laws has removed his entire queen-rearing apiaries to Round Rock, Texas, where he will be better fitted than ever to fill orders for the LAWS strain of FAULTLESS 5-BANDED bees the coming season. BREEDING QUEENS always on hand. Price $2 50 each. I am also breeding the leather-colored stock from imported mothers. Tested queens, either strain, $1.00. 6 for $5.00; untested, 75c; 6 for $4.00. Queens ready in season.

W. H. LAWS, Round Rock, Texas.

Seed Wheat. The Rudy (bearded); a heavy yielder; has averaged over 30 bu. per acre the past five years. This year's crop is 40 bu. per acre. Free from rye, cockle, and smut. Price, per bu., $1.15, f. o. b. at Lancaster, Pa.

LEVI B. HUBER, Hunsicker, Lancaster Co., Pa.

Location for Bee-keepers.

I have for sale 75,000 acres of land, right in the basswood and white clover district of Wisconsin. The land is good, and prices are low. Write for prices and terms.

DORN HAGEN,
Colburn, Chippewa Co., Wis.

Sharples Cream Separators—Profitable Dairying.

Golden Italian Queens.

By return mail, 75 cts. each; $7.50 per dozen. They pleased every customer this year. Well, why not? They are the prettiest, gentlest, and best hustlers you ever saw.

Muth's Square Glass Honey-jars.

Just the package for home trade. Full line of ROOT'S GOODS at their prices.

Honey! Honey!

Have you any fancy white comb or extracted honey for sale? Also beeswax wanted.

C. H. W. Weber, 2146 Central Ave., Cincinnati, O.

FOR SALE.—My apiary of 120 colonies, with all needed appliances, including about 1800 good extracting combs; bees nearly all in 10-frame Dovetail hives, all in first-class condition, located in the famous basswood belt of Wisconsin; 40 acres of land with good house and barn, and good water. Will be sold with the bees if wanted. Good sugar-bush on the place. **W. H. YOUNG, Ono, Wis.**

QUEENS. GOLDEN ITALIANS. Unexcelled for business, beauty, and gentleness. Bred from the best of stock obtainable. Untested, 50 cts. each until Nov. 1st. Tested, $1.00 ea. Extra fine breeding-queens, $2.00 each. E. A. SEELEY, Bloomer, Ark.

WANTED.—To sell Darling strawberry-plants at 35 cts. per 100, postage paid; ready for immediate delivery. H. FITZ HART, Dalkeith, Fla.

FINEST GRADE ALFALFA HONEY.—2 cans, 120 lbs., $9 00. Also small pails and cans. Comb honey, 13 cts. ARKANSAS VALLEY APIARIES, Las Animas, Col.

FOR SALE.—8000 lbs. A No. 1 clover extracted honey in new 60-lb. cans, two in a case, at $11.60 per case, f. o. b. here. Sample free. E. D. TOWNSEND, Hubbardston, Mich.

WANTED.—To buy 1000 lbs. of clover or basswood extracted honey. Send sample, price, and how put up. H. N. COLEY, Westport, Conn.

Mismated Italians for 25 cts.; hybrids, if any found, at 15 cts. C. G. FENN, Washington, Conn.

Twenty-five black and hybrid queens for sale at 20c each. F. H. McFARLAND, Hyde Park, Vt.

Wants and Exchange.

WANTED.—To buy 500 bu. No. 1 dry rice popcorn. GEO. G. WILLARD, 270 Pearl St., Cleveland, O.

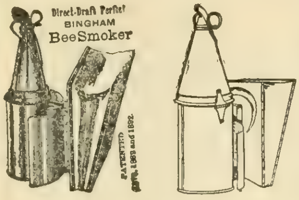
WANTED.—To exchange for anything useful in bee business, tested or untested Italian queens from imported or golden mothers; bred 3¼ miles apart. Also want pure black-and-tan rat pup. J. M. DAVIS, Spring Hill, Tenn.

WANTED.—To exchange 1 h. p. gasoline-engine ($35.00 cash) for Barnes saw. ROBERT B. GEDYE, La Salle, Ill.

WANTED.—Situation as book-keeper, assistant, or clerk, by young man, good reference. Address W. C. WITTENMYER, Emison, Ind.

WANTED.—Good active young apiarist to put in several apiaries for Col. Raul, Arango, at Yaguajay, Santa Clara, Cuba. Wages $25 00 per month, with board, until apiaries are established, then will give them to run on shares. Location good.
F. O. SOMERFORD,
Catalina de Guines, Havana Prov., Cuba.

WANTED.—A location for a feed and saw mill in some good enterprising farm district.
Address 216 Court St., Reading, Pa.



BINGHAM SMOKER.

DEAR SIR: –Inclosed find $1.75. Please send one brass Smoke engine. I have one already. It is the best smoker I ever used. Truly yours,
HENRY SCHMIDT, Hutto, Tex.

MADE TO ORDER.

Bingham Brass Smokers

Made of sheet brass, which does not rust or burn out; should last a lifetime. You need one, but they cost 25 cts. more than tin of the same size. The little open cut shows our brass hinge put on the three larger sizes. No wonder Bingham's 4-inch smoke-engine goes without puffing, and does not drop inky drops. The perforated steel fire-grate has 381 holes to air the fuel and support the fire.

Heavy tin smoke engine. 4-inch stove per mail, $1 50; 3½-inch, $1.10; 3-inch, $1.00; 2½ inch, 90c; 2-inch, 65c. Bingham smokers are the originals, and have all the improvements, and have been the standard of excellence for 22 years. Only three larger ones brass.

T. F. Bingham, : : Farwell, Mich.

1881 **PAGE & LYON MFG. CO.** 1900

We manufacture a full line of the latest BEE-SUPPLIES.

Our motto is, "Perfect Goods and Prompt Shipment."

Send for our new free illustrated catalog.

PAGE & LYON MFG. CO., New London, Wisconsin.

Marshfield Manufacturing Company.

Our specialty is making SECTIONS, and they are the best in the market. Wisconsin basswood is the right kind for them. We have a full line of **BEE-SUPPLIES.** Write for free illustrated catalog and price list.

Marshfield Mfg. Co., Marshfield, Wis.

NOW READY!

64-page Catalog of Every Thing Bee-keepers Need.

Illustrated and fully described. Especially valuable to beginners for the information it contains. Send your address on a postal and get it NOW. Established 1884.

J. M. Jenkins, Wetumpka, Alabama.

WAR IN CHINA,

but in our large apiary of 500 colonies peace reigns supreme. You should try one of our ***Warranted Superior Italian Honey Queens,*** which we will sell for the next 60 days at 50 cts. each. These queens are usually sold at $1.00 each; but this special offer is to introduce one queen in each apiary in this country.

LEININGER BROS.,
Fort Jennings, O.

Belgian-hare Guide and Directory of Breeders. Illustrated, practical, complete. 25 cts. Inland Poultry Journal Co., Indianapolis, Ind.

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25 Colonies Italian Bees For Sale Cheap. No disease, and in good condition; also S. C. Brown Leghorn cockerels, $1.00 each.

H. M. MOYER, Shanesville, Pa.

Queens.

Use No Smoke. **It is not necessary** with the **Sweetheart** strain of bees. A postal card or letter will bring my descriptive circular and price list of these **gentle hustlers** and other strains. I am booking orders for them now, which will be filled in the order received. Don't delay.

A. J. WRIGHT,
Bradford, Steuben Co., N. Y.

BELGIAN HARES.

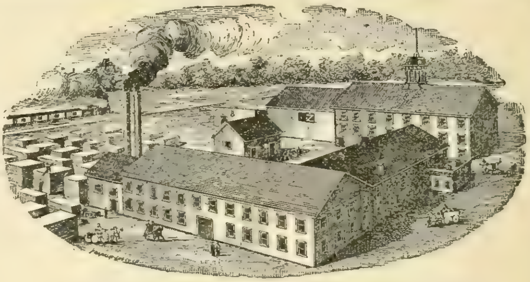
$3 00 per pair up, according to age and quality.

G L. REIDER, ROME, NEW YORK.

BEE-SUPPLIES!

We have the best-equipped factory in the West. Capacity, one carload a day; and carry the largest stock and greatest variety of every thing needed in the apiary, assuring BEST goods at the LOWEST prices, and prompt shipment. We want every bee-keeper to have our FREE ILLUSTRATED CATALOG, and read description of Alternating Hives, Ferguson Supers, etc. *Write at once for a catalog.*

We also manufacture TANKS of either wood or galvanized steel, all sizes, any form, and for all purposes. Price list free.



KRETCHMER MFG CO. Red Oak, Iowa.

Black and Hybrid Queens!

— IN FACT —

ALL INFERIOR QUEENS!

should be replaced with good young ones. With such queens you will have better success in wintering, and a strong colony for the earliest honey-flow. I am a honey-producer as well as a queen-breeder, and know the value of a good queen in a honey-hive. I have selected for my mothers, queens that I consider perfect in every respect. Their bees are large, gentle, and wonderful honey-gatherers. My drone-mothers are also carefully selected.

Queens Go by Return Mail.

One untested queen, 50c; 12 for $5 50. One tested queen, $1.00; 6 for $5.50; 12 for $8.50. Write for prices on larger numbers.

$10 Reward to the person who sends me the most money for queens between April 1 and November 1, 1900.

W. O. Victor, Wharton, Texas.

Don't Buy Supplies

Until you see my 40th annual catalog. A full line of hives and fixtures best adapted to our New England climate. Also best brands of **Comb Foundation and Section-boxes.** I have also made arrangements to keep quite a general stock of

A. I. Root Co.'s Goods at Their Prices.

Parties desiring these goods can get them of me, and **Save Freight Charges.** Bees, Queens, and Nucleus Colonies from the **very best strains** in America. A 40-page illustrated catalog free. Address

W. W. Cary,
Lyonsville, Mass.

HONEY-JARS.

One-pound square, $5.00 a gross; with labels, $5.60 a gross.

Cartons & Shipping-cases

for all sizes of sections. Our cartons are of a superior quality of cardboard, but cost no more than others. Sample free.

Untested Italian queens, 60c. Tested, $1.00. Catalog free.

I. J. Stringham, 105 Park Place, N. Y. Apiaries at Glen Cove, L. I.

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Honey Column.

CITY MARKETS.

NEW YORK.—The inquiry for comb honey is beginning in a small way. Small shipments are coming in, which are selling on arrival. We quote fancy, 15@16; A No. 1, 14@15; No. 1 white, 14; No. 2 12@13. Extracted, demand limited White, 7@7½; light amber, 6@6½; amber, 6. Beeswax, firm, 28@29.

CHAS. ISRAEL & BRO.
Aug. 20. 486 Canal St.

ALBANY.—Not much new honey in market, yet. Reports from the eastern part of the State claim the crop will be light. Think it will bring a good price as soon as the season opens.

MACDOUGAL & CO.,
Successors to CHAS. MCCULLOCH & CO.,
Aug. 20. Albany, N. Y.

SCHENECTADY.—We have had numerous calls for new comb honey, but have received none as yet. We think a good quality of white would sell readily at 15. The present conditions for buckwheat are more encouraging, on account of recent rains.

CHAS MCCULLOCH,
Aug. 23. Schenectady, N. Y.

PHILADELPHIA. — Honey has been coming in quite freely of late; but not in sufficient quantities to overstock the market. We quote extracted, white; from 8@9; amber, 6@8; dark, 8. Comb honey, 14@16. Beeswax, 28. We are producers of honey—do not handle on commission.

WM. A. SELSER,
Aug. 20. 10 Vine St., Philadelphia, Pa.

BOSTON.—Inclosed find quotations for this market. Receipts up to date have been very light, and from present indications in this vicinity we look to see but short crop. Naturally the demand during the warm weather is light, so that immediate sales are not large ones. Fancy white, 15@16, while extra fancy would probably bring 17; A No. 1, 14@15; No. 1,13@14; No. 2, 12 The demand for extracted honey is still very light, prices not firm. White, 7½@8½; light amber, 7@8; Southern honey in very light supply.

BLAKE SCOTT & LEE,
Aug. 17. 31 & 33 Commercial St., Boston, Mass.

KANSAS CITY.—Very little comb or extracted in market. We quote No. 1 white comb, 14@15; No. 2, 13@14; No. 1 amber, 13½@14; dark, 11@12. Extracted, white, 6½@7; amber, 6@6½; dark, 5@5½. Beeswax, 25.

W. R. CRANNELL,
Successor to C. C. CLEMONS & CO.,
Aug. 18. Kansas City, Mo.

MILWAUKEE.—The condition of this market for honey is favorable for shippers. The supply is small; the receipts have been as good as usual at this season, and sales for fancy comb made at better values. Extracted wanted. We quote fancy 1-lb. sections, 16@17; A No. 1, 1-lb. sections, 15@16; amber, 1 lb. sections, 13@15. Extracted in barrels, kegs, and pails, white, 7@8; amber, 6@7. Beeswax, 25@26.

A. V. BISHOP & CO.,
Aug. 18. Milwaukee, Wis.

COLUMBUS.—Receipts of white comb light, and demand good; selling at 14@16. We are in the market either for consignments or straight purchases.
Aug. 18. EVANS & TURNER.

DENVER.—No. 1 white comb honey, $2.70@2.80 per case of 24 sections; No. 2, $2.40@2.50. Extracted, white, 7@8. Beeswax, 20@23.

THE COLORADO HONEY PRODUCERS' ASSN.,
Aug. 15. 1519 Wazee St., Denver, Col.

NEW YORK.—Comb honey in very good demand, and fancy white sells readily at 15c. Some extra fine will bring 16. No. 1 and 2 white, 13@14; amber, 11@12. No change in extracted. Beeswax firm at 28@28½.

HILDRETH & SEGELKEN,
Aug. 25. 120, 122 West Broadway, N. Y.

BUFFALO.—The honey market is in extra good shape; all white honey sells quick on arrival. Fancy, 17@18; A No. 1, 16@17; No. 1, 15@16; No. 2, 14@15; No. 3, 12@13 Extracted, white, 7@8; dark, 6@6½.
Aug. 22. W. C. TOWNSEND.

WANTED.—We are in the market for comb honey in either local or car lots. We especially desire to hear from parties in Pennsylvania, New York, Wisconsin, and Michigan, having white clover and basswood. In writing, state quantity and price.

EVANS & TURNER,
Town St., Corner Fourth.

WANTED, HONEY AND BEESWAX.—We have a tremendous and growing trade in this line, and should like to hear from all having such goods to sell in any part of the country, with quantity, description, and lowest cash price.

THOS. C. STANLEY & SON, Fairfield, Ill.

FOR SALE.—Basswood honey, both comb and extracted. Write for prices, stating amount wanted.

ED. WILKINSON, Wilton, Wis.

WANTED.—Comb and extracted honey. Will buy your honey, no matter what quantity. Mail sample with your price expected, delivered Cincinnati. I pay cash on delivery.

C. H. W. WEBER, Cincinnati, Ohio.

WANTED.—Comb and extracted honey. State price, kind, and quantity. R. A. BURNETT & CO.,
163 South Water St., Chicago, Ill.

WANTED.—Quantity lots of comb and extracted honey. B. WALKER, Evart, Mich.

FINEST GRADE ALFALFA HONEY.—2 cans, 120 lbs., $9 00. Also small pails and cans. Comb honey, 13 cts. ARKANSAS VALLEY APIARIES,
Las Animas, Col.

FOR SALE.—8000 lbs. A No. 1 clover extracted honey in new 60-lb. cans, two in a case, at $11.60 per case, f. o. b. here. Sample free.

E. D. TOWNSEND, Hubbardston, Mich.

FOR SALE.—Choice extracted honey, mostly buckwheat, by the keg, ton, or carload, Send stamp for sample. F. BOOMHOWER, Gallupville, N. Y.

FACTS About Bees.
REVISED EDITION.
How to get
GILT-EDGED HONEY
Send 2c stamp to
THE A. I. ROOT CO.
Medina, Ohio,
or F. Danzenbaker,
Box 66, Washington, D. C.

CHAS. ISRAEL & BROS.,
486, 488, 490 Canal St.,
Corner Watt Street, N. Y.
HONEY & BEESWAX.
Liberal Advances made on Consignments.
Wholesale Dealers and Commission Merchants.
Established 1875.

WANTED.—To sell Darling strawberry-plants at 35 cts. per 100, postage paid; ready for immediate delivery. H. FITZ HART, Dalkeith, Fla.

Wm. A. Selser, Honey Expert,

Office of the A. I. Root Company.

10 Vine St., Philadelphia, Pa.

Dr. Miller's Honey - Queens.

One Untested Queen and the weekly American Bee Journal one year, both for $1.50. To either a New or an Old Subscriber.

We were fortunate in making an arrangement with DR. C. C. MILLER—the well-known honey-specialist—to rear queens EXCLUSIVELY FOR US DURING THE SEASON OF 1900. These Queens will be mailed in rotation, so "first come first served."

The queens Dr. Miller will send out on our orders will be precisely the same as those he rears for his own use, so of course they will be from his best stock. His best colony in 1899 had a queen reared in 1898; May 5, 1899, it had brood in four frames, and he gave it at that time a frame of brood without bees It had no other help, but May 25 a frame of brood with adhering bees was taken from it, and the same thing was repeated June 3, leaving it at that time five frames of brood. It stored 178 sections of honey, weighing 159 pounds (and that after July 20, in a poor season), being 2⅔ times the average yield of all his colonies. A point of importance is the fact this colony did not swarm, and an inspection every week or ten days showed that at no time during the entire season was there even so much as an egg in a queen-cell. Dr. Miller expects to rear queens from this one.

The demand nowadays is for BEES THAT GET THE HONEY when there is any to get, and Dr. Miller has such bees. You will want to have a queen from his best, we are sure.

Don't send any orders to Dr. Miller, as all MUST come through us, according to our agreement.

Remember, send us $1.50 for the weekly American Bee Journal for one year, and ONE OF DR. MILLER'S UNTESTED HONEY-QUEENS. Queen alone, $1. Orders for queens to be filled in rotation.

GEO. W. YORK & CO., 118 Michigan St., CHICAGO, ILL.

Catalog and sample copy of weekly American Bee Journal free. Send for them. Address as above.

Headquarters in Chicago for Bee-keepers' Supplies.

1881 PAGE & LYON MFG. CO. 1900

We manufacture a full line of the latest

BEE-SUPPLIES.

Our motto is, "Perfect Goods and Prompt Shipment."

Send for our new free illustrated catalog.

PAGE & LYON MFG. CO., New London, Wisconsin.

GLEANINGS IN BEE CULTURE
A Journal Devoted to Bees and Honey and Home Interests
Illustrated Semi-Monthly
Published by The A. I. Root Co.
$1.00 per Year Medina, Ohio

Vol. XXVIII. SEPT. 1, 1900. No. 17.

STRAY STRAWS FROM DR C. C. MILLER

COTTON WASTE that you find along the railroad track is sometimes too rich in grease, and puts out the fire. Mix with it some plain cotton rags, and it will be all right.

IN *Le Progres Apicole* is given as an outfit *indispensable* for a beginner, movable-frame hive completely furnished with foundation, veil, smoker, brush, and uncapping-knife.

THAT G. S. CREGO, who stands up for Maywood as a temperance town, p. 664, may be pretty safely counted on as all right, for to my certain knowledge he raises some of the finest roses I ever saw.

A. I. ROOT has discovered afresh that, the more one lives outdoors, the healthier one will be. He's making progress. Time was when he would smoke bees into the hive when they insisted on hanging on the outside.

ONE POUND of wax to 28 pounds of honey is about the right thing to set down for section honey, isn't it? That's according to Prof. Gillette's figures for comb 1.37 inches thick, which is the thickness in sections 1⅞ wide, with separators.

FORMERLY I thought that a colony that did not swarm stored more than others simply because of not swarming. I am gradually settling into the belief that, when you find a colony not given to swarming, you find unusually good harvesters, and *vice versa*.

HURRAH for Hyde's squirt-gun feeder! Be sure to tell us how it works at Medina. [I should like to tell you, but I can't. I have been away from home, and just returned; but before another issue I hope we shall have some definite practical knowledge of it.—ED.]

HERR THEODOR WEIPPL, who for ten years has so ably edited the excellent German bee-journal, *Bienen-Vater*, has resigned his position, leaving the editorship temporarily in the hands of the committee, with Herr Josef Schmuck as responsible editor.

OUTDOORS *is* a great place, friend A. I. Root. And if we only had the time to appreciate it, we needn't go 'way up into Canada to find it. I can go right out on our back porch and enjoy a more comfortable place than any I found at Saratoga, and just as much outdoors to the acre as anywhere in Canada.

YOUR HEAD'S LEVEL on the prize business, Bro. A. I. Root. I wish all Sunday-school workers could read page 658. Prof. H. M. Hamill, the world's leader in Sunday-school normal work, says: "Do not give prizes, which put wrong motives before the few who win them, and discourage the many who fail."

HIGH PRAISE is given to dwarf Essex rape as a forage plant, p. 666. Now can any one tell us about its value as a honey-plant? In Europe, rape is a very important honey-plant; and bee-keepers haul their bees to the rape fields sometimes, to get the benefit of the nectar. Is rape of special value for bees in this country? and is the dwarf Essex as good as any other for honey?

UNCLE LISHA, what's the use of stirring up our sympathy for Tim Fasset's sobbing boy with his failure to spell *dough* correctly? There's no help for it. During the next three months rivers—well, hogsheads at least—of tears will be shed over our barbarous spelling, by that boy and his kind, just because Stenog and some others with sense enough on other subjects are clean daft on spelling.

AN AUSTRIAN, Ignace Kirchweger, has patented an apparatus which introduces a queen mechanically. Two cylindrical cages have openings which do not coincide until the one with the queen has made a complete revolution in 12 to 24 hours, run by clockwork. [The present Benton cage is about as nearly automatic as any thing can be. Why anybody should want to get up a complicated cage, run by clockwork, I can not see. See editorials. —ED.]

SULPHUR is "the only practical known remedy" for wax-worms, says Doolittle, p. 653. How about bisulphide of carbon? Another thing: If you find flour like places on your comb honey, the next thing is to sulphur it, and one sulphuring will suffice if no fresh honey is brought into the room. Will the sulphur kill the eggs not yet hatched? [We have an article on this question of freeing comb honey from worms, in this issue. It has special reference to the use of bisulphide of carbon.—Ed.]

"Are you sure that, by getting the section enough shorter to make it square, the bees will make a better fastening at the bottom?" quoth ye editor, p. 645. Pretty sure, Mr. Editor, if no bottom starter is used. But understand, I give that only as the argument of the others. My own reply would be, "But I don't need to change the shape of the section to get the comb fastened to the bottom-bar. A bottom starter does that best in any case."

A graceful thing was done by Canadian bee-keepers at their last convention in conferring upon J. B. Hall the distinction of being the only life-member of their association, on the ground that "he has been the life and soul of the association meetings for the last nineteen years." Although Mr. Hall does not write for the papers (more's the pity) he is a walking cyclopedia of bee-knowledge, and, besides, "he's a mighty good fellow." [Yes, it is too bad we lose the benefit of Mr. Hall's experience through our bee-journals.—Ed.]

J. F. Munday, in *The Australasian Bee-keeper*, wants me with closed eyes to taste a sample of a greasy section and compare it with one snow-white. He thinks I would pronounce the first the better honey. That's not the question, friend Munday. It's not what *I* prefer, but what the dear public prefers; and so long as said public insists on the whitest sections, and the greasy sections must sell at a lower price, I don't want to produce greasy sections. [Some greasy honey would taste no better (if as good) than some good white-faced honey. If I had to buy the honey for my own use, without tasting it, I think I would take the white. Some comb honey is greasy, for no other reason than that it is old last year's goods.—Ed.]

When a queen is sent by mail she always has an escort taken from her own hive, doesn't she? The other day I put into a shipping-cage a queen I didn't value, and put with her some bees from another hive. They were entirely kind to the queen. Probably they are so frightened at being shut in that they have no thought of fighting any thing. If it always works that way, why can not that be made the basis of a safe method of introduction? Instead of caging the queen for safe introduction, cage the bees. [I know, it is true, that a few bees when caged will accept a queen a good deal better than when they have the liberty of the hive. Their close confinement and close quarters so disconcert them that they are willing to accept any thing; but I know from experience it is not safe to put strange bees into a cage with a good queen, although it *can* often be done without any bad results.—Ed.]

PICKINGS

FROM OUR NEIGHBOR'S FIELDS.

BY "STENOG."

Heavy rains still pouring down,
  Followed soon by broiling heat;
Vegetation's rank and green—
  Food for all to eat.

* * *

AMERICAN BEE JOURNAL.

O. O. Poppleton, of Florida, reports 16,500 lbs. of extracted honey from 115 colonies.

* * *

Mr. S. B. Strater, of Illinois, suffered the total loss of his shop and gristmill, last July, including books and every thing in the mill.

* * *

D. L. Durham, of Illinois, says that sweet clover and heartsease are the salt that saves the bees and bee-interests in his vicinity.

* * *

A correspondent says, "I set one sweet clover plant to the right of each hive." I supposed all clover plants were equally sweet. What kind of clover was it?

* * *

R. V. Goss, of Alabama, found a dead lizard to which the bees had attached their comb. It probably died in a hollow limb; and as the bees were unable to move it, and it being perfectly dry, they built right up against it as they did inside of Samson's lion.

* * *

Mr. York prints a map of a part of Chicago showing how to get to the convention and to his office. By the way, how that town grows! Since 1890 it has added a whole Cleveland and a Detroit to its population. I'm glad Lake Michigan prevents its growth toward Medina.

* * *

When Mr. Langstroth told Prof. Cook that he wanted to find some one to revise his work on bees, Mr. Cook suggested the Dadants, and he still thinks nobody is sorry for the decision. Of the A B C book he says it is a work of which all may feel proud. Of Cowan's book he says he does not wonder that it is regarded as the most authoritative work in Europe.

* * *

BRITISH BEE JOURNAL.

Mr. Buttel-Repen, of Germany, has written a book on the life history of the bee, and in it he puts forth the theory that bees have seven kinds of smell, as follows: Distinctive individual smell; distinctive collective smell; brood and food smell; drone smell; wax smell; honey smell; nest smell. The author says, "I am of the opinion, which is shared by many scientists, that insects possess senses or sensation quite unknown to us, and which on that account we can not even imagine; so that we are unable to say whether the impressions produced on us by certain actions and movements have the same effect on insects. For myself. I am firmly persuaded that they are not." While it is agreed that bees have no visible hearing organs, they certainly have something that serves that purpose, and the same may be said of the smell.

* * *

Mr. A. C. Sewell, writing from South Africa, gives the following interesting items in regard to the fate of the poor bees that happened to be between the two contending forces:

> An apiary near Spion Kop, consisting of seven bar-frame hives, is cleared out, but in this case some broken frames scattered about gave the impression that they had been "taken up" on the Boer system by thrusting some lighted grass into the entrance; the owner also losing a good supply of bee-appliances, as well as all his household goods and farm implements.
>
> The tragic fate of another stock in a fine, full-size glass observatory hive, standing in a garden inside the town, was not involved in the mystery attaching to the others, for it was blown to atoms by a shell that burst close to it, and a splinter from it knocked a cup of tea out of the owner's hand, who himself escaped uninjured.
>
> A little lot of bees up near the top of the mountains managed to escape the general ruin, and beyond one or two isolated hives that I have not yet heard about, I think it is almost all that is left in the district. But the owners do not intend to give up bee-keeping, as one was down here last week and took back two stocks to make a fresh start, and I have just heard from my old friend that he has captured a stray swarm, evidently a starvation one, and is bringing it up with the syrup-bottle.

* * *

For disinfecting hives, the editor has the following sensible suggestions to make:

> There can be no more effective means of thoroughly disinfecting hives - in which bees have died through foul brood—than a "painter's lamp." No organism can stand contact with fire, and the lamp referred to intensifies heat just as a blow-pipe does the flame of a gas-jet. Remove the paint from hives inside with a spatula—as painters do very quickly—and then with the flame "scorch" the surface of the wood without burning. Even the spores of foul brood would go down before *that;* moreover, it does away with the need for repainting.

* * *

As indicating the great tenacity with which foul brood holds on when once well under way, I copy the following from a correspondent in Wickford, England:

> I had my first experience of it in the spring of 1899, three of my hives being attacked. In two of them the brood was in the brown or ropy stage, while in the other one it was in the light-colored or early stage of development, which does not smell so bad. I burned the worst of the three outright, and when our county expert came he advised driving the other two stocks and treating the bees as a swarm, which I did, uniting both lots in one hive on six frames. I then fed the bees till they would take no more. They built out and filled twelve frames of comb, and I packed them for winter on ten frames The bees came through all right and were doing well when the expert came this year. I put on a box of shallow frames in good time; but as the bees did not start work in them I took them off last week, and on examining the comb below found the disease there again, but not bad, while there was a good strong lot of bees. I soon made up my mind what to do this time. I have burned and buried the lot except the clean shallow combs, which are put away ready for melting when I send my wax for this year, and I hope that will end it with me. My other eight stocks are doing well. I may say the hive is broken up for firewood.

The International Apicultural Congress will be held in Paris on the 10th, 11th, and 12th of September. Invitations have just been received here, requesting the members of the Root Co. to be present. Mr. Calvert intended to attend when he left here. Such a meeting can not fail to do much good.

GENERAL CORRESPONDENCE

DEVELOPING CLOVERS WITH SHORTER COROLLA-TUBES.

The Method to be Followed, and Some of the Difficulties, from the Standpoint of One who has Spent Years in Working at the Problem.

BY E. E. HASTY.

Friend E. R. Root: — You call me out on the clover-developing proposition. Yes, I was in that effort quite a long time — grew cold at length, and let the multiplicity of other things cause me to drop out. Perhaps the indifference of the bee public helped me a little in getting cold; and if Dr. Miller's call for renewed effort gets lots of volunteers I may wake up and "tag on."

And what can I tell to the new volunteers which will be to their profit? Perhaps not very much. I'll advise them to keep distinct in their minds the three kinds of work to be done. Call them, if you please, A work and B work and C work. The A of it is to go into the fields and select short-tubed clovers. Better take plenty of time and do lots of this, as this is likely to be the most encouraging part of it (perhaps all the encouragement you'll get). Field clovers vary greatly—vary in the line of being lots of long-tubed ones and lots of short-tubed ones, and also vary in the line of there being few and rare specimens, which can be found by long hunting, much more hopeful than the easy-found ones.

Work B is the slow and tedious work of raising seedlings year after year, and *keeping them from backsliding*, as they will probably disgust you by doing, and slowly, with careful selection, getting a little shorter and shorter as the years go by. It was this work that tired me out. It is going to take a great many years. Five years, or ten, will be only a "circumstance" in it. Still, perhaps it's best not to give it up, even if like

Freedom's battle, once begun,
Bequeathed from bleeding sire to son.

It is necessary to keep in mind the fact that the time of year, amount of fertility in the soil, vigor of growth, drouth or the opposite, and various other things considerably affect the tube-lengths of the same plant. On these accounts we often seem to be gaining when we are not. And it *might be* that we would seem to be losing when we were really gaining. Practically, after three or four years of effort you will *probably* feel very much befogged as to whether you have really gained any thing or not.

Work C is a sort of diamond-hunting work. Most plants, besides their capacity for gradual change, show from time to time sudden and great changes in a particular seedling or a particular bud. These almost startling manifestations are called "sports." If the desired bee-clover arrives during the present generation it will be by finding and rendering permanent one of these sports. During the years I was in the work I found two sports, or plants, which I called such. One of them I lost my grip of so completely that I have nothing to show for it — couldn't be *sure* that it would ever have filled the bill any way. The other one seemed to be pretty much all one could ask, gained at one leap—but with one lamentable shortcoming. It was about as near to being *seedless* as a plant could be without being absolutely so. I never had a dozen seeds at one time. To have even one plant in bloom, when a friend called and I wanted to show him my prize—why, I considered myself lucky. A package in my clover-drawer says on the outside, "Three seeds, 1897;" alas! too old to grow now, I fear—and that is all I have to show for years of effort with that incipient variety. Since the first few years, the most hope of success which I have been able to cherish has been that, with long patience, a plant might appear in this succession which would have flowers as open to the bee as the parent flowers have been, and *also* seeds like those a civilized clover ought to have. Perhaps when the weather gets a little cooler I'll try those three seeds for all they are worth.

There is also a sport which *frequently* appears in red clover, having white seeds and pure-white blossoms. I made easy progress in breeding this down to a fixed variety; but had I kept on to completion it would have been of the same use as stripes around our bees' tails, no use at all—tubes no shorter than ordinary reds

But in fussing with the white sports I think I made a *discovery* which perhaps ought to be understood and considered by all those who work in such work as this. It is, that progress tends not to go on regularly with each generation, but by regular *alternation* of generations. A little hard to describe this so a reader will catch on readily. Say you are trying to get a white variety from a white sport. First generation you raise 100 seedlings, and say 3 of them are white and 97 backslidden and red. (Think you have got a tough job before you.) Second generation, 100 seedlings pan out 50 white and only 50 backsliders. (Think you are getting on swimmingly.) Third generation you find 15 white to 85 backsliders. (Half inclined to give the thing up as impossible.) Fourth generation, however, pans out 55 white to 45 reds. And so it goes on, with regular oscillation back and forth with each generation, but on the whole manifestly getting ahead. I have come to feel that something like this affects nearly all work of the kind with seedlings.

Richards, O.

[While your experience, friend Hasty, is somewhat discouraging, yet it goes to show that, if the effort is persistently followed, we shall be able to accomplish something. If the example given in your last paragraph represents somewhere near the actual results you secured, then, in spite of the backsliding, you got in the fourth generation over 50 per cent of the very kind of clovers you were seeking.

I have known something about this backsliding of varieties; but I did not suppose the tendency to go back to the original was so strong. If the same rule holds true in the breeding of cattle, of horses, of poultry, then we have great cause for encouragement, because, in all the lines of stock mentioned, in spite of the difficulties a very great differentiation has been secured. The running horse is very different from the trotter in general build; and both differ very greatly from the draft horse. The variety of specimens in poultry goes to show the possibilities in working from sports. Now, then, my point is this: If the breeders of all these various kinds of stock have been beset by this constant backsliding to the styles and markings of the original parentage, and *they* have been able to secure what they were after, *we* can do the same. The only difficulty is, can bee-keepers interest experiment stations to such an extent that they will keep up a line of work that will cover a period of years? From what you say, I should judge that such a line of experimenting would have to go from one generation of experimenters to another before the goal could be reached.

I should be glad to receive an article from some one who knows something of the difficulties of breeding poultry stock to weight, color, and markings, and just how these things have been secured. Such an article will give us pointers in breeding bees with longer tongues and clovers with shorter corolla-tubes.—Ed.]

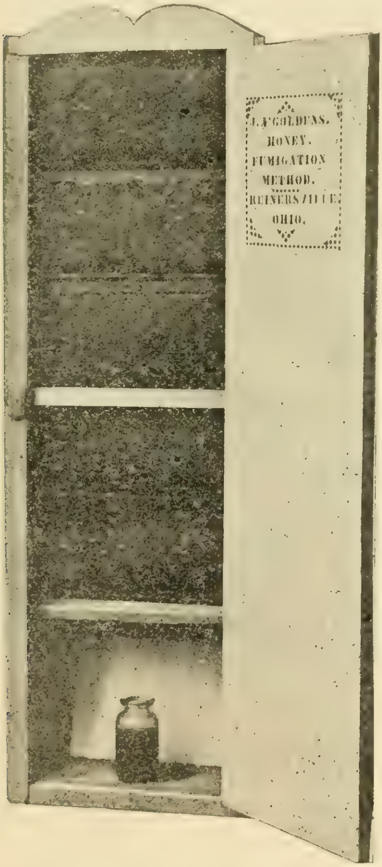
FUMIGATING COMBS AND SECTIONS.

How to Make a Fumigating-box; the Use of Carbon Bisulphide.

BY J. A. GOLDEN.

The question how to destroy the moth-worm, both in brood-combs and in section honey, is of long standing, and many pages have been written setting forth the various methods employed, giving the formulas for the benefit of bee-keepers at large, as well as consumers of section comb honey; and while the various methods have proven successful with many bee-keepers, there are still many who have been unsuccessful with any of the plans published, even with the bisulphide of carbon. I am fully convinced that carelessness has been the principal cause of failure to destroy the moth-worm, either in brood-combs or section honey, especially with the fumes of sulphur or bisulphide of carbon, for either, properly used, will effectually destroy every vestige of the moth-worm, large and small—yes, even the eggs secreted within their hidden deposits; but to be successful with any method one must have a properly constructed room or cupboard specially for the purpose of fumigating with either sulphur or bisulphide of carbon. This, properly and carefully attended to, can not fail to prove effectual every time; and why it is that bee-keepers will toil and sweat in the hot sun in producing a beautiful lot of section honey, and then put it through some slipshod form of fumigation, and put it on the market, or store it away for better prices, and in a short time see it all marred up by the little destroyers, the wax-worms, is a problem that I have never been able to solve.

Just a few days ago I called at a place where I saw a beautiful lot of honey, all nicely filled out in the no-beeway sections; but when I picked a section up and inquired who the producer was, I really become hot. Yes, there it was, all over the face of the honey—the little seams of powdered comb—something I never saw on comb honey properly fumigated either with sulphur or bisulphide of carbon. The latter is preferred by me in preference to any other, as it is a dead shot every time, and easily applied; and for the benefit of the bee-keeping fraternity permit me to give my method, illustrated by a cut of my fumigator, which now contains 48 combs of honey. This honey is taken from colonies that have swarmed. When making the change, on the fifth day after returning the swarm, as per my method, it is fumigated, and will be stored away in my honey-room for spring feeding.



Having used bisulphide of carbon I will guarantee that not a living worm or egg remains within or about the 48 combs you observe hanging in the fumigator. Thus by looking at the cut any one can construct a fumigator for a few cents. This one is 6 feet and 4 inches high, 20¾ inches wide, and 15 inches deep, inside measure, made from plowed and grooved lumber, and as nearly air-tight as possible. Cleats upon which the frames rest are 1¼ in. square lumber, and thoroughly nailed in place. The cleats upon the side, on which the door hangs, project out past the binding, so that, when placing a frame in at opposite sides, the frame rests on the cleat, and pushes back. Each apartment holds ten brood-frames having six compartments, in which 60 combs can be fumigated at each time, or 363 3⅝×5×1½ sections of comb honey at each fumigation. The cross-strip at the door-button is a tie to keep the cupboard from spreading. The board which you see full of holes rests on side cleats, and is used for section honey to rest on, also for spreading the fumes evenly to the sections A perfect-fitting door with a ⅜ hole at the bottom and top of fumigator, with stoppers, completes one of the most essential pieces of furniture belonging to an apiary.

When placing section honey in my fumigator I use two boards, one placed half way, as there would be too much weight resting on the lower sections if but one was used after placing on three tiers. I have a set of strips of thin lumber, ¼×1, which I place over the top of sections, spaced to rest on sections at corners; then I continue placing sections, leaving a small space between the face of sections; thus a more thorough fumigation is achieved.

To fumigate I place a Mason pint glass jar as shown in cut, and pour in a small portion of bisulphide of carbon, and close the door and remove the stoppers from the top and bottom, leaving it thus for an hour, the little draft forcing the fumes to every section at the same time, when the stoppers are replaced and left for ten hours; then remove the jar containing the bisulphide; close the door and remove the stoppers, and remove your honey at any time, with the assurance that no wax-worms exist about it. Brood-combs require at least 48 hours; and, if badly infested with the moth, pour a small portion of bisulphide in a plate and set it on fire and close the fumigator. Thus the fume is strengthened by the fumes of carbonic acid and monoxide of carbon, which penetrates through the entire mass, and every living germ is destroyed. Only brood-combs are thus treated.

Mr. Davenport, in his valuable article in GLEANINGS, page 564, makes mention of two kinds of bisulphide of carbon. I think there is but one—carbon disulphide or bisulphide (sometimes called), inflammable, with strong characteristic odor and aromatic taste. This is more inflammable than ether, and great care should be observed when using it. It also should be kept in a dark cool place in well-stoppered bottles. So far as bisulphide fumes injuring comb honey, if so I have never been able to discover it, nor have any of my patrons; and if properly used it is safe, effectual, and valuable to apiarists, and a blessing.

Reinersville, O., July 25.

HIVING SWARMS IN SHALLOW BROOD-CHAMBERS.

Hives for Producing Comb Honey; Keeping Down Increase; Dispensing with Movable Frames.

BY HARRY LATHROP.

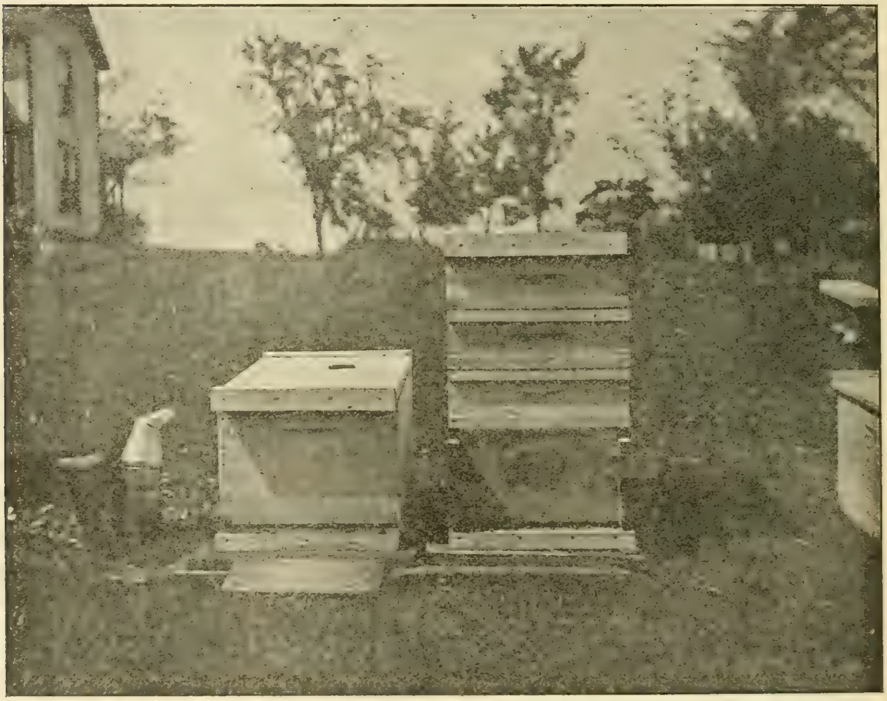
Friend Ernest:—In response to your request I send you herewith some views taken in my Monroe apiary where I use the eight-frame Dovetailed hive. These views show the hives from which swarms have issued, while the supers are on a shallow brood-chamber in which the swarms were hived on the old stand. As I said to you recently, with our short season of honey-gathering it will not do to hive swarms in ordinary brood chambers, as it takes too long for the bees to get things filled up in shape below. I do not like side contraction, because we want bees and brood under all the sections. Furthermore, when a bee-keeper has as many colonies as he wants on his field he must arrange to double back at the close of the working season.

I will explain briefly how I got to working with temporary brood-chambers. I had a lot of old brood-chambers, the same size as the eight-frame Dovetailed, but much deeper. I had them ripped up to make shallow extracting-supers. They are just seven inches deep, the frames enough shallower to allow the usual bee-space on top.

To get these frames filled with comb, I at first began hiving comb-honey swarms on them; but it is so satisfactory that I would make and use them, even if I did no extracting. We fasten a starter of medium brood foundation in each frame, enough to half fill the frame. The bees soon build them clear down, and nearly all worker cells. When I hive in these I usually place a spaced queen-excluding honey-board under the sections, and I do not think it retards the bees any.

I have another arrangement, very similar, which I have used to some extent, and like first rate too. It is a shallow brood-chamber made of common fencing, and having common lath nailed in the top—no frames. The lath are planed smooth, placed only a bee-space apart, and a close bee-space (¼ inch) below the top edge of the brood-chamber. The supers of finished honey come off from these as clean as they were when they went on, even when used without queen-excluders. It is the same with the Dovetailed hives as you make them. There is no trouble from burr or bridge combs, while the Grimm-Langstroth hive is very bad in this respect.

After the honey season is over, these shallow brood-chambers with frames are handy to



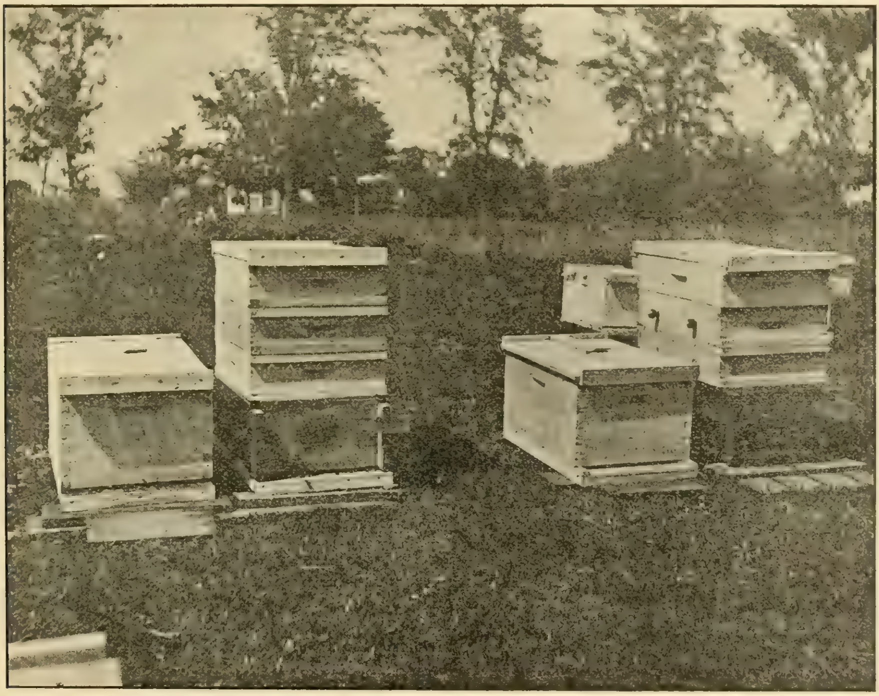
H. LATHROP'S MONROE APIARY.

Swarms from Dovetailed hives worked for comb honey in shallow temporary brood-chambers; very little honey stored below in the shallow frames; outside depth of brood-chamber 7 inches.

use in queen-rearing if such is desired; and, later, the bees can be returned to the hive from which they came, which, of course, will contain a young queen. I use Danzenbaker bottom-boards with these shallow brood-chambers or any flat board with strips nailed on to make a bee-space. The Danzenbaker hive and system is all right; but when a bee-keeper has all the Dovetailed hives he needs, what is the use of buying an expensive hive for comb-honey production when he can make the arrangement I have described for about ten cents each? We have a number of good teachers on comb-honey production. At the head stands Doolittle; but he does not use our hive; his teaching is more general. Davenport and Mrs. Barber are specific, and they are all right. Among them all, no man knows better than Danzenbaker how to get comb honey. But we can't all adopt his hive, on account of the expense and work of changing.

But while I have been speaking of the way in which I handle colonies that swarm, I want to say that I have fewer and fewer swarms. When there is a good honey crop I have less than in a year when there is just enough nectar to keep brood-rearing going at a good pace. This year, with a fair crop of white clover, and a basswood flow of only three or four days, I had less than 25 per cent of colonies that cast swarms in the Browntown yard. Where swarming does not occur, the Dovetailed hive or the eight-frame Langstroth is all right for comb honey; but I get no more finished comb honey from those colonies that do not swarm than from those that do; but there is less work involved. I think Mrs. Barber's method of first giving a set of extracting-combs is a splendid practice to prevent swarming. In some cases I give a set of full-depth extracting-combs; and as soon as they are nearly full I take them away and give them to a weaker colony to ripen, and in their place put two supers of sections containing full starters. The bees, being used to the same amount of space above, will occupy both, and finish evenly. Our white-honey harvest is about 75 per cent of a full crop.

Browntown, Wis., July 20.



A CORNER IN MONROE APIARY.

Comb-honey work, Dovetailed hives, and shallow brood-chambers; the colony with supers on will be united to the colony in Dovetailed hives at the close of the season.

[I believe that your ideas in the matter of the production of comb honey by the use of shallow brood-chambers, and keeping down increase, are orthodox and sound for some localities. Some ten or twelve years ago this general plan was talked of and advocated much more than now. While the scheme is not new, it is worth bringing up at the present time.

It was Mr. Heddon who, years ago, intimated the possibility of using shallow brood-chambers without movable frames, on the plan of handling brood-chambers only. In the production of comb honey such a scheme would be possible. I said there are a good many throughout the country who are practicing essentially the same methods you advocate. I should be glad to hear from others who have made the system a success.

With regard to the depth of brood-chamber (7 inches) I would say that Mr. Danzenbaker has on file hundreds of letters indorsing that depth for a brood-nest for the production of comb honey. Strangely enough, he has also testimonials from those who have placed the seven-inch brood-nest and the ten-inch brood-nest side by side, with the result that the taller ones were the only ones that got any surplus comb honey. Mr. Danzenbaker explains it by saying that the ordinary 8 and 10 frame Langstroth size is the wrong shape, and that to contract it by means of division-boards does not give good results—that it should be contracted horizontally. This same idea was advocated years ago by Mr. Heddon, and by those who favored and adopted his system.—Ed.]

BELGIAN HARES.

Their Life History; Continued from Last Issue.

BY PROF. A. J. COOK.

The English fanciers recognized at once the excellence of the Belgian hares. Their beauty, grace of form, excellence of flesh, and, best of all, their hardiness and abundant fecundity, each and all recommended them to the intelligence of the English breeders. Such men as Slater, a scientist of no mean rank; Dr. Barham, Mr. Ernest Wilkins, and Secretary W. Lumb, were not only enthusiastic admirers of the new *leporines*, but engaged actively at once in the improvement of the race and the dissemination of knowledge regarding it. As already stated, these English fanciers kept before them, as an ideal, the English hare, *Lepus timidus*. It is even stated that one of the best breeders had one of the English hares stuffed, and kept it before him as an ideal to work toward in perfecting the new race. In this way has been acquired the rich brown rufus-red coloring with its ticking of black, the graceful, clean-cut form of the animal, the perfection of eye, ear, and limb development, and the exceeding vigor and prolificness of this breed of rabbits. I doubt if we can get a better idea of the characteristics of this beautiful animal than by giving the scale of points adopted by the British Belgian-hare Club, to be used in judging the leporines at the various exhibitions. I will comment on each feature as it is given.

Color—rich rufus-red; "not dark smudgy," extending well down the sides and hind quarters, and limiting the white under the jaws to the utmost. 20

Ticking.—The word "ticking" refers to the black color which results from the tipping of the ends of the hair with jet black. This should be wavy and plentiful, but should be confined to the back and loins. If the ticking extends too far, the "golden tan," as the English call the rufus red, does not produce the beautiful contrast that is desired in the best show animals. 15

Form.—Body long, well cut up in flank, ribs prominent, back slightly arched, loins not bunched, but smoothly rounded; head long, chest with good muscular development; tail straight, not corkscrewlike—in all a form suggesting that of a well-bred racer. The very shape should suggest alertness or sprightliness of demeanor. Squatty, lazy animals will stand little chance in the show-ring. 20

Ears.—The ear should be about 5 inches long; thin, with a well-marked lacing. By "lacing" is meant the black color that tips the ears. This should extend as far down on the outside edges as possible. The front of the ear should show the rufus red with ticking, the inside clear rufus red. . . 10

Eye.—The eyes should be rich brown or hazel in color, full round, bright and honest. 10

Legs and feet.—The fore feet and legs should be long, straight, and graceful, and free from white hairs; in fact, all the legs should be well covered with a uniform coat of rufus red. 10

Weight.—The weight should be about eight pounds. 5

Condition.—Not fat, never bunchy, but flesh firm like that of the race horse. The fur should feel well to the touch. . . 5

Without dewlap. 5

Total— 100

In the above description of the color no mention is made of white. There is a white patch both in front of and behind the eye, and a streak, nearly white, over the front of the upper eyelid; beneath the chin, extending back to the angle of the jaw, and showing in a side view, is also white. The base of the ear on the outside is white, as is a part of the inside when seen in profile. There is no other white except that of the belly and between the fore and hind legs. As we see from the description above, the only black is the tip and margin of the ear and the ticking, which is confined to the back and loins.

All of the other parts are of the rich-red chestnut, which, as we have seen, should extend to the tip ends of the feet. To quote from the admirable work of Mr. Ernest Wilkins on the Belgian hare, from which I have received much information: "The whole properties of the make-up of the Belgian should combine to the eye, as the wild hare does, a look of gracefulness and activity. A thick, choppy, angular Belgian is an abomination."

I will next proceed to give the life history of this interesting animal. The males become virile at four months of age, though they do not mature nor reach perfection in form and coloration until eight months old. In some cases this last is not true until the rabbit attains the age of one year or eighteen months. The males are pugnacious, and do not do as well if kept in adjacent pens. The females commence to ovulate at four months, after which they ovulate every four days. From six to fifteen eggs pass from the ovary at each ovulation, and thus we see that from six to fifteen young may be born at each parturition. The period of gestation, or "kindling," as it is called by the rabbit-fanciers — that is, the time from mating to parturition — is thirty days. As ovulation may take place in four days after birth of young, it will be seen that eight or more litters may be produced in a year. As the number of young ranges from six to fifteen, we readily understand how it is that the animals are so exceptionally prolific. The young rabbits nurse for about six weeks, so that, if the mother is again mated in thirty days from the time of giving birth to her young, she may have a rest period for two weeks before giving birth to another litter. While, as we have said, the males are virile at four months, they should not be used before eight months old, when one good buck will be sufficient for twenty-five does. As the males get older they are apt to become bunchy or choppy, and so some of the best breeders recommend that males be used only between the ages of eight months and two years. I do not believe this is a good rule to follow. If a person has an exceptionally good male I think such male should be used, even though it did become somewhat unshapely. From the general laws of breeding I should suppose that he would still continue to transmit his good points, and would not disappoint his owner. I think no one objects to breeding does from the time he commences, when the doe is eight months old, till they are three or more years of age. If I remember correctly, the prize-winner, Lady Britten, not only took the cup at the Palace two years in succession, but also won the prize among old does the third year.

PRINCE YUKON, OWNED BY S. N. KEMP, LOS ANGELES.

The principles that apply in breeding Belgian hares are the same that hold among other animals. It pays well to begin with good stock. As the male is half the herd it is especially desirable that only good bucks be secured. Though it is not so necessary that all the does be of good quality, yet it is doubtless very wise to start with a fine strain of does. The cost of a single animal, even of the expensive strains, is not so very great but that it will easily be repaid in a very short time by the added value given to each of the very numerous progeny. In such breeding we may well remember the proverb, "Well begun is half done." The prospective breeder should study the animal till he fixes in his mind an exact picture of what he desires to produce. He should then select and mate his animals that he may reach his ideal in the quickest time. While it is always best to breed from excellent stock, there is danger, as in all other breeding, in following too close in-breeding. While this may produce very fine (and in many respects wonderful) results, there is great danger of producing animals with lessened vigor and impaired constitution.

I think there is no question but that the Belgian-hare industry will go well with that of bee-keeping. It is found well to call a halt in breeding during the hot months. Thus, while the apiarist is most occupied there may be a let-up in the care required among the rabbits. Any way, the best proof of the pudding is in the eating, and I know of some bee-keepers who have made rabbit production a very great success, and have used it to tide over the discouraging failures in their apiaries during years of drouth and consequent honey famine. I believe it will pay bee-keepers who wish to add some other pursuit to that already adopted to study up the Belgian-hare industry.

That this business has merit appears in the fact that though hardly more than a dozen years old in America, it has already assumed exceeding proportions. While attracting not a little attention in the East, yet, owing to the more genial climate of Colorado and California, the business has made unparalleled growth in these latter States. I think the first association was organized in Denver, while now there are many associations and clubs in California. That the business has been unduly boomed, there can be very little doubt. Already a reaction seems to have set in, if we may judge by the lessened price paid for this savory meat. Chickens are grown everywhere, and by almost everybody; yet dressed chickens sell in many places for 15 cents per pound. If dressed rabbit meat can be produced, as I have been assured, at 9 or 10 cents per pound, is it not almost certain that rabbit-raising will become a reliable business, and rabbit meat a staple food product in all our markets? I believe we may look forward with considerable confidence to such an outcome. The excellence of the meat, the health and vigor of the animals, the ease with which they can be bred and reared, and their startling fecundity, all would seem to indicate that the business has come to stay. I know very shrewd business men who have put thousands of dollars into it. The fact, too, that a person may commence in a small way at a very slight expense, and grow so quickly into a large business, also recommends the industry. It is stated by good authority that, with a good buck and five does, a single season may give a rabbitry of 300 animals. I understand, too, that the whole building equipment for this number may not cost more than one dollar per animal, or $300.

Southern California may almost be said to be the paradise for this business, owing to our exceedingly mild climate. The hutches may be very inexpensive, and the breeding season may be continued throughout nearly the entire year. It is also easy here to secure good ventilation with no danger of exposure to cold.

SHOP TALKS
BY UNCLE LISHA

THE VARIATION IN HORSES AS WELL AS BEES.

Just as I was loading supers filled with sections from my shop to take to one of my outyards, about the last of May as nearly as I remember, Deacon Strong came in with a cheerful "Good morning, Uncle Lisha;" but I noticed something was not quite right, and I inquired, "What is the matter, deacon?"

"Oh! nothing much," he answered; and after a few moments he asked, "Did you know my horse Prince is dead?"

"Dead? no! When did he die?"

"A few days ago—or, rather, nights, perhaps I should say, for I found him dead in his stall in the morning. The horsemen think it was colic, or something of that sort. It's quite a loss, but the worst thing was to think that he died there all alone without medical assistance." He talked on, "There are plenty of horses to be had, I find, but there are not many just what one wants. Almost the next day after old Prince died, Antoine Duprey wanted to sell me an old plug he had. Said he, 'A hoss is a hoss; and if it young enough it's all right. She no look very good, but she can go like sixty.' He seemed to think he could make me think what he wanted to, but I declined to buy. A little later Tom Townley called with his chestnut mare. He said there was all the difference in the world in horses. Some were great travelers, and could travel ten miles an hour while another was going five. And then one would work all day and then kick up at night, as though nothing had been done. Some would live on very little, while others seemed to be little better than machines for running through fodder; and he gave me to understand that his chestnut mare would keep fat and sleek on pure air and three quarts of oats a day, although he did not say so exactly. But really I never did realize there was such a variety of horseflesh or such a difference between different animals, and I have been wondering if there is as much difference between bees."

"I have thought about it a good deal myself this spring," I replied, "and have watched more closely than usual, and am more and more satisfied that just as great differences exist among bees as horses. Take the matter of size, for instance. I notice a very perceptible difference. I was so much interested that I brought some home from an out-apiary, and, after keeping them some time, placed the bees from the two hives between two thin glasses, and took them to a photographer to be photographed so that accurate measurements could be taken; but the artist said they were the worst things he ever tried to photo—worse than babies—would not keep still, and so spoiled the plate; but the plate was clear enough so by actual measurement we found a decided difference."

"I wonder," said Deacon Strong, "if these differences in different hives of bees will not account for some of the differences of opinions among bee-keepers."

"I have little doubt of it," I replied. "You remember the difference of opinion between the Roots and Doolittle as to the distance bees will fly for honey, and gather and store successfully? Doolittle seems to think they will fly from three to six miles from choice, while the Roots think that unless the flowers are within two or three miles bees will not make much headway in storing surplus. Now, I have often wondered if this difference was not owing to Doolittle's having stronger bees, or those capable of more rapid flight, although the lay of the country may make some difference."

"I have wished I knew," said the deacon, "what makes the difference in two colonies side by side. So far as one can see, both are equally populous, both have the same amount of brood and honey, and queens of the same age, and equally prolific by the middle of May, and yet in a few weeks one has far outstripped the other; and I don't see but we shall have to lay it to these natural constitutional differences, greater strength, or constitutional swiftness of flight, larger honey-sacs, length of tongue, etc., or all of these combined."

"It is interesting to notice how all the queen-breeders are of late recommending their queens for business rather than for color I believe the tide is setting in in the right direction," I replied.

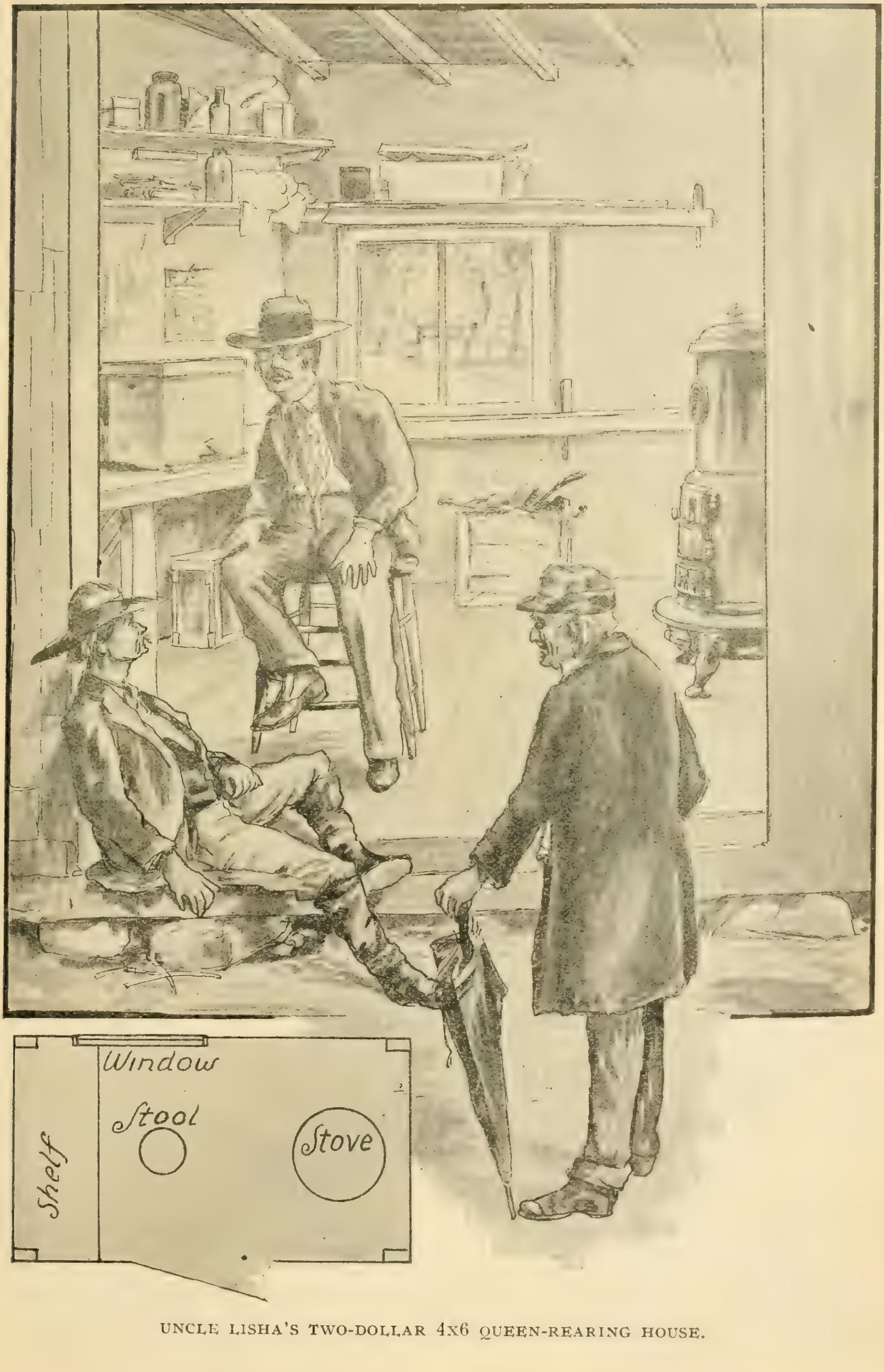
"Great granthers! talking bees still! I'd supposed you would have talked the subject dry long ago," said neighbor Simpson, who had come to borrow a quarter of a pound of Paris green to finish spraying his potato-patch.

"Good morning, Mr. Fasset. I wonder if the deacon and I can not get together for a little bee-chat but you know instinctively what we are talking about, and come over to hear or help carry on the conversation. At this rate I shall not get away with this load of sections before noon."

"No, that isn't it," said Tim. "But I come to ask a little advice. I want to raise some choice queens this year; in fact, I want to raise enough queens to replace all my old stock."

I noticed he seemed a little excited.

"Dog it all! Consarn it! I have got into —"


Window
Stool
Stove
Shelf

UNCLE LISHA'S TWO-DOLLAR 4x6 QUEEN-REARING HOUSE.

"Careful!" said Deacon Strong. "I hope you don't mean to be profane."

"No," said he, "I don't; but I have got into a great scrape this spring. You know I bought a tested queen of ——, and raised a lot of queens from her last year; and those hives with those queens had filled their combs so full of honey from willows and dandelion blossoms that I had to stop right in corn-planting time and take out some of the heaviest combs of honey, and give empty combs so the queens could lay—something I never had to do before. It beats the bangopher how those bees do haul in the honey. I want to raise a lot of those queens this year. Doolittle says you want a warm room in which to transfer the larvæ, and you know my shop is large, and slow to heat, and I thought I would take them into the kitchen; but a bee-sting would almost kill my wife, and I haven't the money to build a small shop right out among my bees. It would cost more than twenty-five dollars."

"Well," said I, smiling, "just you come and see what I have been doing. I was in about your fix, but I have now what suits me very well. In fact, I never had a small thing please me more, and it has cost me less than two dollars besides the labor."

On our way to the bee-yard Fasset asked, "Did you know we have another boy down at our house? We are in luck. He came where he was wanted, and we are all more than pleased."

"Is it likely to prove a 'howling success'?" I inquired.

"I don't know about that," Fasset responded; "but Johnnie says as soon as it is old enough he will teach it to 'holler'; and the little girl's surprise and joy know no bounds. 'Why, papa,' says she, 'did you *spects* it?'"

But we were soon at my queen-castle, or queen-rearing establishment, and Fasset laughed.

"Not a very large structure, is it?"

"No, it isn't. All I wanted was a place that was warm, and large enough to transfer young larvæ to queen-cups and keep a few tools in. It is just 4×6 feet, and yet roomy enough for a good deal of business. A small sheet-iron stove at one end will raise the temperature to 90° very quickly with a single fire cool mornings in May or June. A shelf at the other end, some twenty inches wide, and high enough to come above my legs when sitting on a stool or in a chair, makes the best kind of bench for transferring larvæ. A window about two feet square, just at my right side, and facing the east, gives me light just where most useful. A few small shelves at the sides above the broad shelf give place for my glasses, tools, 'Doolittle's Scientific Queen-rearing,' etc. A thermometer hanging right above the broad shelf in front of me while I am working shows the temperature at a glance. Two old supers nailed to the side above the stove gives a place for storing queen-cages and cell-protectors. It protects me from robber-bees and gives me a warm convenient place to work; and, as I said, it is a great source of pleasure. From my seat I can reach almost over the whole building, and get any thing I want. I found some old pieces of joists in a rubbish-heap, for sills. Two or three old boards from the barn loft make the floor. Then I had a lot of old dry-goods boxes that I knocked apart and used for siding and roof-boards. The most of the expense came in the door and window, and stove and pipe, which, as I said, cost less than two dollars. Here I can sit in a warm comfortable place, even when cold outside, and with a quill-point change the plebeian life of worker-bees into the estate of queens with all the honors and dangers of royalty."

"About what I need," said Fasset. "Another thing," said he, "I want to ask about. I am away from home a good deal, and I don't have good luck in cutting out queen-cells and putting them in a nursery when only six or seven days old."

"How do you manage under these circumstances?"

"Well, I have to be away from home a good deal, you know, and have anticipated just such troubles; so I made last winter some queen-nurseries of a different pattern from any thing I had ever seen, and was going to give the bee-journals something new; but I see Pridgen, in a late number of the *Review*, has practically the same thing which he slips right over a stick of queen-cells. Beginners at queen rearing by the Doolittle style find it a little difficult to select larvæ of just the right age, and such a cage keeps any queen that hatches too soon from killing the rest. It can be slipped over the cells on the ninth day, and every thing is safe; but you have got to have your cells placed on your stick pretty accurately so they will fit."

"Well, now, that is cur'us and pretty interesting," said Fasset, as I lifted a frame from a hive with eleven large queen-cells and as many queens already hatched in this nursery.

NOTES OF TRAVEL IN EUROPE.

BY J. T. CALVERT.

On leaving home, July 16, I planned to spend an afternoon in Syracuse, N. Y., on my way to Boston to take the boat for Liverpool. I spent a pleasant and profitable time there with our genial friend F. A. Salisbury. I was greatly interested in visiting the works of the Solvay Process Co., an immense institution employing 3500 men. Some four to five thousand horse power in water-tube boilers is required to produce steam for operating the great quantity and variety of machinery and pumps in the works. The output of the works is soda in its various forms.

We sailed from Boston July 18, about 3 P. M., on the steamer New England, of the Dominion Line, bound for Queenstown and Liverpool. We had 1001 passengers aboard, and the crew consists of about 600 more. The length of this vessel (565 feet) laid down nine times makes almost a mile. It is a veritable floating palace.

We had ideal weather for the voyage—so

favorable, indeed, that one of the sailors who has been crossing back and forth for the past 39 years said that he believed, taking all conditions into account, it was the best voyage he has had. We did not encounter any icebergs, rain, or fog; but we were privileged in sighting one or more vessels each day. We passed several schools of whales and many of porpoises. These are fish about five or six feet long with wide-spreading tail, and they leap from the water very often in pairs as though they were racing with each other and with the ship, and were frolicking for our amusement. The salt water of the ocean is a very dark green; and as it is dashed up into spray at the bow by the force of the vessel it changes to a light sea-green or bottle-green, which is beautiful. I noticed the first night a most peculiar phenomenon to which my attention had never been directed. As I looked down into the water by the side of the ship I noticed a great many little lights in the water, varying in size and brilliancy and duration. They reminded me of fireflies, or, as we sometimes call them, "lightning-bugs." They are phosphorescent animal life in the water of the mighty deep, emitting a light all their own, which, however, they doubtless store up from the sun's rays, as the sun is the source of all heat and light and life physical. They were making their light shine just as we who have absorbed the light of life from the Son of Righteousness should make our light to shine amid the darkness of this world of sin.

We touched the dock at Liverpool on Thursday, the 26th, at 5 P. M. The next hour was consumed in removing baggage, and there must have been at least 200 men employed at this on vessel and on shore. At six the passengers began to land, and at seven we had passed our baggage through the customs and were aboard the special train which was to carry us to London. The trip required four hours' time, running at the rate of at least fifty miles an hour, and not more than five stops on the way. It was not dark till nine o'clock, so we had a good opportunity to see the country through which we passed. I was struck with the extreme neatness of every thing. The streets and roads were as clean as though they had been swept. The embankments were covered with green sod. The buildings were almost universally of brick. I have not yet seen a wooden building. Many, of course, are of stone. Neatly trimmed hedgerows divide the fields and farms, and line the roads and railways. Occasionally a temporary wooden fence was seen alongside a young hedge. The wheat and other crops were still green. The passenger cars on the railways are divided into compartments across the car from one side to the other, having two seats facing one another, and a door on each side. When once you are in and the train starts, there is no intercommunication between compartments in the train. A train can be emptied very quickly, as not more than twelve people can occupy a section having an exit door at the side opening directly on to the platform. No conductor or other official can pass through the train. Tickets are secured before taking the train at what is called the "booking office," and there are three classes, with little difference in the accommodations, except that in the first or second you can be a little more exclusive. There is quite a difference in the fares. Most people travel third class, and the fares are very low. Tickets are examined or collected at the station when taking or leaving the train. On long-distance trains requiring several hours to make the run, there is intercommunication between cars and compartments; but the cars are totally different from any we see in America. In this country of short distances and more dense population this system is much better than ours, and yet it would not be at all suitable in America, except, perhaps, for suburban trains in the large cities.

There are no crossings at grade. All roadways and even foot paths, as well as other railways, must cross above or below, never on the same level. In the streets of London there are no electric cars, and I have seen no street cars as we have them. The common conveyance is called a bus, with seats on top for fourteen people, and inside for twelve, drawn by two horses. Except in rainy weather most people prefer to ride on top, and you must climb the winding stairs at the rear while the bus is in motion. In fact, they come to a dead stop as little as possible, because it is hard on the horses. They can keep it in motion much easier than they can start it. In some places there are what are called tram-cars. These are constructed like the buses, but a little larger, and run on steel rails. A two-wheeled rig having the driver perched up in a box behind is called a hansom, and is very common as a private conveyance for one or two persons. Fares on the buses vary from one cent up, according to the distance. There is being put in, but not yet open for traffic, a system of underground electric cars away below all sewers and other underground railways, about thirty to forty feet below the surface, with lifts (or elevators) at each station, and universal fares of 2 pence (equals 4 cents) between all stations.

The population of London is over five and a half millions, and the great mass of the people live in tenement and apartment houses and flats. Even in the suburbs the number of houses standing alone is very small. But a very small number own their own homes as compared with American towns and cities.

I am particularly struck with the marked civility and gentlemanly bearing of the people. You may accost any one on the street, and always receive a courteous and civil answer. They appear not to begrudge the time taken to be civil. Indeed, they will often volunteer just the information needed at the opportune time. In the common exchanges of every-day life the deferential "thank you, sir," is heard on every hand, even between servants and porters. I have not yet heard a word of profanity nor any thing approaching it.

The feeing system is quite universal, and servants expect a fee for every service rendered. No doubt this has its influence in molding their manners, and yet they are none the less courteous if they do not receive the expected fee. They are often quite ready to remind you of the fee in an adroit way.

CONVERSATIONS WITH DOOLITTLE

DO BEE-KEEPERS' CONVENTIONS PAY?

"Good evening, Mr. Doolittle. I ran in a little while to-night as I had a little spare time, to have a chat with you. Will you attend the National Bee-keepers' Convention at Chicago the last of this month?"

"I shall not. My mother, nearly 85 years old, is apparently just about to pass to the beyond, the better land for all those who have trusted in Christ, as she has done for over threescore years, and my duty is plainly at home."

"Sorry to hear of your mother's low condition. But do you really think that it pays to attend bee-keepers' conventions?"

"That depends very much upon the spirit in which they are conducted."

"What do you mean by that?"

"If they are simply for the purpose of getting a crowd of bee-keepers together, the majority of whom are obliged to listen to the dissatisfaction of a few who wish to discuss the faults of other bee-men, to 'get even' with some one who has got the start of them at some former convention, or for the express purpose of puffing the wares a few have for sale, then such conventions are neither beneficial nor profitable."

"I have heard something about a convention once held in this State that was something along the line you speak of."

"Yes. We have not only had county and State conventions conducted thus, but such things have even touched the national organization also. But of late years there seems to be a spirit of reform in this matter, for which I am very glad."

"But do conventions pay at best?"

"If one convenes wholly for the purpose of discussing subjects connected with the practical part of bee-keeping, each one freely imparting knowledge on any subject to which he can add his mite, so that *all* are willing to give an equivalent for the knowledge gained, then I say bee conventions pay."

"Will you tell me more explicitly about the paying part?"

"There are three prominent points to be kept in mind in attending conventions, if we would make them pay. The one I consider first in importance is this: We should forget all of the cares and duties which have pressed on us during the year, and go to the convention like "a boy let loose from school," to recuperate our health and life, while on the journey to and fro, and by a free and social intercourse outside of convention hours. By this latter we often learn more of value than we do during the hours the convention is in session."

"But I can go over and see Mr. C. and chat with him on bees, and save the expense of attending the convention at some distant place, can I not?"

"Yes; but you can not see A, B, D, and E there, besides a host of others with whose names you are not familiar, many of whom you could not see except at a cost several times that of going to a convention. I fear we do not prize these social privileges highly enough. There are things that pay better than working for honey constantly, that said honey may be turned into money, and the social part of life is one of them."

"Money-getting seems to be the main part of the program in the world at the present time."

"I fear you are too nearly right in this matter. But each of us who sees that the world is going in the wrong direction in this matter of worshiping money should do all we can to bring about a reform along this line, and a bee convention is a good place to start the ball to rolling among bee-keepers."

"But what about the second point?"

"Our second object should be to secure all the information we can, so that we can put it in practice in the apiary, and, if of value, impart that value to others; to a neighbor, through the bee-papers, or at some future convention."

"But I should think you would forget much that was said and done before it came time to put it in practice, especially where the convention was held in the winter."

"This is quite liable to be the case where one depends entirely upon the memory. But where a person makes a sort of reporter of himself, and jots down in a small book the leading thoughts of each speaker, very briefly, he can, after getting home, look the matter over so as to bring the whole fresh to memory. The matter which is considered the more important can now be written out in another book, the same having four or five pages for each month in the year, writing the important matter under the month to which it will apply. So when the month of June arrives, with this book before me I can put in practice what A, B, or C told the convention about the day before Christmas, the year before. Suppose A told us that bees would do better work where the hive was raised an inch from the bottom-board, when the white clover commenced to bloom—better not only as to surplus honey, but better to keep the bees from swarming. This is jotted down for June, for this is the time the white clover blooms. Upon opening our book our eyes fall on this matter, and immediately we put the thing in operation on about one-fourth of our colonies, when the end of the season will give us the results. If the results are in favor of thus raising, we will tell at the next convention just how we did it, and just what and how much benefit there was derived from it."

"But why tell of it? Why not keep it to ourselves as part pay for the expense of attending the convention?"

"For two reasons. If selfishness is the prompting motive, the *first* reason will be that, in the telling, the matter will be the more thoroughly imbedded in our minds through a reflex action, and thus we shall be benefited more and more. Undoubtedly you have heard the old metaphor along this line, which runs:

> There was a man, his neighbors thought him mad;
> The more he gave away, the more he had.

"It is impossible to impart knowledge to others without being benefited by this reflex action. And the second reason why we should tell of it is that the world may receive the benefit of what we know, so that generations following may be bettered by standing on more advanced ground than where we stood. If a man is so selfish that he keeps all to himself, and dies with all the good things which he found out, the world is not a whit better for his having lived in it."

"Never mind your sermonizing. What of the third point?"

"Thirdly, we wish to examine all the implements, hives, etc., to see if any of them, or parts of the same, will help us in securing our products more easily, with less expense and in better shape, or give us more than we already secure with our own fixtures. In short, bee conventions not only pay in many ways, but also tend toward cementing together those who attend, with a love and good fellowship that is worth more than dollars and cents can buy. But I am obliged to meet an engagement at eight o'clock, so shall have to hitch up my horse and be going."

EDITORIAL BY E. R. ROOT

THE frequent rains over the country are causing good fall flows of honey in various sections, especially in Wisconsin, where there was such a drouth and an almost complete failure of white honey.

SAMPLES of bees are being sent in right along for me to measure their tongues. So far the longest measurement I have obtained is $\frac{20}{100}$. I am not able yet to get any great variation. Some tongues will show up .16, some .15, and some .18.

THE county fairs will soon be held over various portions of the United States; and bee-keepers who are in the immediate vicinity of them would do well to fumigate all their colonies with a little tobacco smoke in the morning. It is our plan to give our colonies about two or three whiffs, and then repeat the operation two or three hours afterward. Without this tobacco dosing we are likely to have trouble with the candy-men from the frequent visitation of the bees.

BY the special notice given on page 702, of this issue, our readers will see that we have at last succeeded in getting a $200 red clover queen with bees having extra-long tongues. This queen and her colony have given the most remarkable showing in red clover of any bees since our red-clover stock of over 20 years ago, and which we have been trying to duplicate ever since. We now have it, and, what is more, the queen is a leather-colored one, imported direct from Italy.

PERHAPS the average honey-producer will feel that the long editorial in this issue on queen-rearing will not be of any special interest to him; but I am thoroughly convinced that *every one who keeps bees* should rear a very large per cent of his own queens. If he uses late methods, and goes at it intelligently, his stock of queens will be fresher and better, for I can not help feeling that a journey through the mails often interferes with the longevity and future work of queens.

THE FERRIS WAX-EXTRACTOR.

WE recently had a very pleasant visit from C. G. Ferris, of South Columbia, N. Y., of wax-extractor fame. Mr. Ferris has given the subject of rendering of old combs a very careful and thorough study. After an extended examination into the merits of his machine we have about concluded to catalog it for next season, believing it to be the most efficient of any thing ever devised. True, it has to make use of artificial heat, but I am satisfied that it will pay for itself in the extra wax it will secure, before the season is half over. We hope to present it to our readers very soon, with illustrations of the special features of the machine.

INTRODUCING QUEENS BY THE PASTEBOARD METHOD.

REFERENCE has been made in the *American Bee Journal* editorially, to the new method of introducing that we have been using in our apiary for a year or two back, and which we have recently applied to all the Benton cages that go out from our office. It is well known that the release of the queen from the Benton cage has hitherto been accomplished by the bees eating out the candy through a small hole in one end of the cage; but up till a few months back this hole has been plugged with a small cork. The receiver of the queen was directed to remove said cork when he placed the cage on the hive. It sometimes happened after a long journey that nearly all the candy was consumed, and in such cases the queen would be released before the bees got acquainted with her and kill her. But all this has been changed. A piece of pasteboard with a line of perforations is nailed over the hole, instead of plugging it with a cork. When the cage is received it is laid on the brood-frames after removing the cover, and that is all there is of it. The bees will stick their tongues through the perforations, gnaw the holes larger, and tear away the pasteboard. This takes anywhere from 12 to 18 hours, after which the candy is eaten out and the queen released, so that the whole thing, from beginning to end, is automatic. All the receiver of any queen has to do is simply to take the cage, remove the cover, and then lay it on top of the brood-frames of the queenless colony; close the hive up, and "let 'er go, Gallagher." You press the button, and the bees do the rest.

This method of introducing is no experiment. We have used it in our own apiary for a year back. Mr. Wardell, our apiarist, came to the conclusion that bees were eating out the candy too quickly, and sometimes releasing the queen before they had had a chance to become acquainted with her. He conceived the idea of nailing a piece of pasteboard over the candy, as a restrainer, which, from his knowledge of bees, he thought they would gnaw away. The scheme worked perfectly. He thought so little of the invention that he did not tell me any thing about it, and I presume he had been using the method for some six months before I happened to blunder on to it—that is, I learned that he had made an improvement in the ordinary method of introducing by the candy plan. He continued using it with the greatest success; but, as he used it, it was in connection with the Miller cage, which used just the same principle as the Benton.

Early this summer we applied the plan to all the Benton cages we sent out, and the results secured have been uniformly good. By the old plan, after the receiver of the queen had removed the cork the candy had been so much eaten by the bees, in some cases, after a long journey, that the bees would sometimes release the queen in from ten to fifteen hours, which is altogether too short a time; but now these same bees spend from twelve to eighteen hours in eating away the pasteboard before they get at the candy, and at the very least calculation it takes very nearly 24 hours before they can release their new queen-mother, and nine times out of ten it will be much longer.

I asked Mr. Wardell what per cent of queens he could introduce safely by this method.

"Why," said he, "I do not lose any at all."

"Would it be safe," I asked, "to say in print, that at least 99 per cent of the queens introduced by that method would be received and accepted by the bees?"

"Why," he replied, "if I were using the Miller cage I think I could guarantee a good deal *better* than 99 per cent."

We have heard of many methods of introducing queens, but I do not think there has been any thing yet devised that is so simple for the beginner and the average person to apply as the candy-pasteboard method. If the Miller cage is used (a flat oblong cage), and the colony has not been queenless for over four or five days, you can almost guarantee absolute introduction. The Root Co. would do so now; but the trouble is, so many colonies to which queens are introduced have been queenless for a week or ten days that the bees get to depending on their cells, and then it is often very difficult to introduce to them a queen by any plan.

THE VARIOUS MODERN METHODS OF QUEEN-REARING COMPARED.

Mr. Wardell, our apiarist, has, as our readers know, been very successful with the Doolittle method of rearing queens—so successful, indeed, that he felt disinclined to try any other. Said he, "Ernest, I get good results by this plan that I am used to, and from your own statement I make a success of it; now do not go and ask me to go and try some other fellow's new-fangled plan, and get me all mixed up." But I insisted that he try the Pridgen, the Atchley, the Alley, and the Jones methods. Having heard the most favorable reports from Dr. Miller about the Pridgen plan I was very anxious Mr. W. should give it a very thorough test, and this he seems to have done very carefully and conscientiously.

The Pridgen plan differs from the Doolittle in that the Pridgen removes the cocoons of larvæ, just hatched, by means of a little stick with a concave bottom that fits tightly into the cocoon. This cocoon on the stick he inserts in his little goblets, or wax cups, twists the stick, loosening cocoon until it adheres to the cup. The plan further differs from the Doolittle in that Pridgen does not make use of royal jelly, but simply depends on the regular food which the larva has in the bottom of the ordinary worker-cell, and which has been removed—cocoon, larva, and all—at one operation, and inserted in a goblet queen-cup.

The Jones plan, which is practically the same as the Alley, makes use of ordinary drone cups, or cells, shaven down, and then grafted, every one or two cells in alternation, with royal larvæ.

The Alley plan is the same, except that he uses worker comb containing eggs, every other cell of which is destroyed, including the egg.

The Atchley method is much the same as the Pridgen, except that the Atchleys remove the cocoons and insert them, or did do so, in cups by means of tweezers.

Mr. Wardell has tried faithfully and carefully all of these methods, and at the present time he is using all of them side by side. The result is, he has drifted somewhat from his first love, the Doolittle plan, and now prefers drone comb, grafting with royal jelly and larvæ every fourth cell. That is to say, he grafts one drone-cell, skips two, which he destroys, then grafts the next one, and so on. He will take an ordinary queen-cell of the right age, when it has the largest amount of royal food, and with the quantity in that cell he will supply 20 ordinary drone-cups with sufficient food to give the cells which he grafts a good start. But before the drone-cells are grafted he enlarges the opening of the cell by means of a blunt stick. These grafted cells of drone comb are then fastened on a stick and inserted in a frame. It is next given to a queenless colony that has previously been fed up for three or four days, and then deprived of all unsealed brood.

COLONIES FOR CELL-BUILDING.

He now prefers queenless colonies, or colonies that are about to supersede their queens, to upper stories having a reigning queen below. He says the upper-story plan is all right during the swarming time, but it is impracticable (although he can use them) after the honey-flow.

Mr. Wardell has recently been using worker-cells in place of drone comb, which sometimes he does not have, and with them he secures uniformly good results. Yet, all things considered, he prefers the drone comb when he can get it.

He wishes it to be distinctly understood that he does not condemn the Pridgen method, which he says is all right, but that he can graft a certain number of drone-cells, or Doolittle cups, with larvæ and royal food, in less time than he can prepare a given number of cells *a la* Pridgen by transferring cocoons; and he also believes that those cells that contain royal food will be more likely to be accepted. While the royal jelly is not absolutely necessary, yet from many experiments he is convinced that it furnishes a larger per cent of accepted cells. He has now charge of our 500 colonies and nuclei, and almost alone he keeps the whole number at work. His experience with us for the last two years must, therefore, be somewhat extended.

HOW TO GET DRONES OUT OF SEASON.

Some little time ago he complained that he was not able to get sufficient drones for fertilizing our queens; that he might give a queenless colony frames of drone comb, and feed them ever so carefully, yet the queens would not lay in drone comb; but he partially solved the problem in this way: He gives a colony a frame containing two-thirds worker comb and about one-third drone near the bottom edges. The queen will start laying in worker-cells, and as her circle enlarges she will gradually work over into the drone-cells. In this way he thinks he "steals a march" on the queens and bees, for he has been able to secure drones from choice stock, and at a season of the year when it is very difficult to get a good supply of choice drones.

Soon after the Philadelphia convention last year I asked Mr. Doolittle how he managed this difficult problem. "I don't manage it very successfully," said he. "At a certain period in the summer there is a time when bees will almost refuse to rear drones." If so good an authority as Doolittle has been floored, perhaps this kink will be worth much to many of our queen-breeders.

263 CELLS FROM ONE COLONY.

A moment ago I spoke of the fact that Mr. Wardell uses, when he can, colonies that are about to supersede their queens. He always keeps such colonies, as he considers them a real acquisition. One such colony has reared for him 263 cells. The bees have been trying to supersede their queen all this time; but before they can possibly get a young mother he takes away their cells and makes them go all over their work again. This colony has actually reared batches of cells, batch after batch, and yet they go on faithfully, building cells without a murmur, in the hope that, in the sweet by and by, they will be able to rear a young queen that will relieve the reigning mother. They have continued this till they have reached the total number of 263 cells, and how much longer they will keep this up remains to be seen. He has other supersedure colonies that he is working in the same way, but none of them have approached anywhere near the record of this one. Possibly the bees have learned that, so long as they rear cells, they are liberally fed. If so, they are worthy of their hire.

OUR HOMES,

BY A. I. ROOT.

Dear friends, I have a particular reason for not putting a text at the head of my talk today. The reason is, I want each and every one of you to put the text that belongs there when you come to recognize it from your own hearts; that is, I expect you to recognize and see the text long before I get to it. The story was told me during that week of camp life away out in the wilderness. During our resting-spells and at mealtimes we were in the habit of having long talks. There was no business on hand to hinder—in fact, there was nothing to prevent. We did not even have to get away from the table to let the women-folks clear up things. Well, during one of these talks Mr. Ed. Grainger said there was a remarkable man in Toronto whom I would like to meet before I went home. Perhaps I shall not get the story just right; but I think I can get it near enough to answer every purpose.

The man he was speaking of is named Gardner. I believe he was not originally a gardener by profession, but he dropped into it by a combination of events. He formerly lived in Philadelphia, and had a position that commanded a good salary. His wife's people, if I am correct, lived in Toronto, and in the course of time it became quite necessary that he and she should move to Toronto on account of his wife's relatives, or something of that sort. He accordingly gave up his good place and looked around Toronto for quite a spell for something to do. Every opening seemed to be supplied. But our friend Gardner knew he could in time work into something where he would get good pay. And now I want you to notice a point right here that does not belong particularly to our talk or sermon. It comes in indirectly.

After Mr. Gardner had satisfied himself there was really no opening for him at any thing like his former pay he decided to take up with the first position that offered, no matter how humble, and trust to his own genius and industry to enable him to let the world see what he was good for. He got a position as janitor at one of the churches, and rented a cottage adjoining said church. Now, there was a nice square piece of ground belonging to the cottage, that ran close up to the church, separated by only a light fence. As his duties as janitor did not occupy all his time he set to work on this piece of ground, fitted it, graded it, and fined it up as I have often told you about, in the most scientific manner. Then he planted it to beets, carrots, and other garden vegetables, suited to his purpose. He selected some beets with bright-red foliage. Then he selected a variety of carrots with ornamental tops. Who has not noticed the beauty of carrot foliage? I have often remarked that some branches were as handsome as some of our finest greenhouse ferns. He had other vegetables, but I do not remember the names of them. Well, he grouped these vegetable-plants in such a way as to make an ornamental foliage-bed, and it very soon began to attract the attention of passersby. People stopped and looked at that bed of ground in astonishment, and they asked questions about the wonderful new plants. Finally it attracted so much attention the church people begged to have the fence taken down so that it might appear to be a piece of decoration belonging to the church. Greenhouse men, horticulturists, newspaper reporters, and travelers heard of this bed, and went to see it. They stood spellbound with astonishment. Photographs of it were taken, and finally a wealthy man from Philadelphia made Mr. Gardner such an offer to go and decorate his grounds in Philadelphia that he gave up his position as janitor, and went to Philadelphia at a large salary, leaving his family in Toronto. But he finally came back to Toronto, because he preferred smaller pay in order to be with his own people. By this time Grainger Brothers succeeded in securing him. Just now they have an arrangement whereby this Mr. Gardner designs and puts out the finest ornamental and foliage beds in the city of Toronto. I think he stands at the head of all their horticultural artists—not exactly as a landscape gardener, but as a designer of decorative plant-beds. Grainger Brothers furnish the potted plants, geraniums, achyranthus, alternanthera, gymno-carpus, and other plants that are generally used by gardeners, and Gardner plans the beds, puts in the plants, and takes charge of lawns and yards of the finest residences of the city. If I am not mistaken, there is one place in the city where several thousand dollars are expended each year in this kind of ornamentation. The above is by way of introduction of the person I want to tell you about.

Mr. Gardner is a devoted Christian, and from what I know of him (for I have since seen him and talked with him) I can readily imagine that, while he had the humble position of janitor, he asked God to lead him in a way that he could help himself, and do good to his fellow-man. I do not think he was a gardener at the time, but he was, without question, an *observing* man. Well, one of his tasks as landscape decorator was to fix up the lawn of a millionaire. Things went on very pleasantly for a time, and the whole family regarded Mr. Gardner as an acquisition. By and by, however, the millionaire came home one evening intoxicated, as most millionaires are in the habit of doing, so I am told. Oh dear me! can this really be true, that a man who has millions of dollars should so far forget himself and stoop to such folly as deliberately to sell or dethrone his reason and common sense? Well, this rich man met Mr. Gardner in just the mood to find fault and to abuse his best and most faithful friend. He found fault with the work, called Mr. Gardner bad names, and finally commenced cursing and swearing about it. I believe friend Gardner recognized it was not worth while to talk with a drunken man, and for a time made no reply. This seemed to encourage his rich employer to heap on abuse, and to use more foul language; but when it came to blasphemy he spoke up and told him he had never been sworn at by anybody, and said if the work was really so unsatisfactory he would take it out and restore the place to its original condition, without charge. He then would give up his place.

This was so much of a surprise to the man who had been in the habit of riding over everybody it brought him to his senses. He made haste to apologize, and even got his wife and daughter to come out and help him persuade Mr. Gardner to overlook the whole matter, and go on with his work. I hardly need tell you this wealthy man was a skeptic. He had many times bantered his landscape gardener on his faith in God and his religion, and I think he was the one who attacked Mr. Gardner on a line that almost every professing Christian has heard argued more or less. The unbeliever commenced in something after the following fashion:

"Mr. Gardner, let us suppose there are two men, and, if you choose, I will be one of them. I am a man who has been fair and honest with everybody all my life. I have paid my debts; I have kept the laws of our land; I have been guilty of no secret sins or crimes; I am not a hypocrite; the only fault you can find with me is that I can not accept the Bible as the word of God, nor can I accept or believe in the God you Christians talk about. Now, the other man who stands by my side has been a criminal all his life. He has broken every commandment and every law, almost, of our land. He has committed murder, adultery, and let us even suppose that he has even committed an outrage on my own family—violated and trampled under foot every thing most holy—a veritable fiend in human form. This man, with his hands reeking with the blood of his fellow-man, steeped in crime, and hated by every respectable man and woman, goes to heaven, while I go to hell. The excuse for such a state of affairs is that this bad man, before he died, *repented* and *accepted Christ as the Son of God*, which I am not as yet prepared to do."

I confess, friends, a picture something like the above has been presented to me many times by some one who seemed to take pleasure in picking flaws with the gospel of Jesus Christ. I do not think that I ever tried to answer this argument very much. I do not know but I have sometimes admitted I was unable to explain the matter, at least to my full satisfaction. Now, our dear brother of whom I have been telling you has never had a theological education. In fact, I am not sure he has ever spoken in any meeting nor even in prayer-meeting. I am afraid he is not even a teacher in Sunday-school. He has his peculiarities, like the most of us; but, notwithstanding, he has the spirit of Christ in his heart, and has read his Bible, I am forced to believe, more understandingly than some of the theological students, and may be graduates. He replied very quietly, and, as nearly as I can get it at second hand, something as follows:

"My dear brother, if you will permit me to answer your question by telling another story about two men as you have done, I think I can help clear the matter up—that is, if you are really anxious for light on the subject. As you said, let us bring forward two men. In my case the two men will be brothers. The elder brother was a good man. He had been upright, straight, honest, and industrious all his life. He was a model son. The other turned out to be a shameless scapegrace. The parents, however, kept him under restraint as long as they could. But he finally broke away from all parental authority, scraped up what he could by fair means or foul, persuaded his good old father to give him his share of what would be likely to come to him, that he might get out of their sight and hearing, and go off where he would never be heard of again. This youngster was thoroughly bad. As nearly as we know he was about as bad in every respect as the man you have pictured. Stricken with grief, and with almost broken hearts, the parents handed over the money to this wayward son, and bade him good-by. He went off and plunged into all sorts of debauchery. We do not know exactly what crimes he committed; but it is very fair to infer he broke every law, leaped over every barrier that restrains decent society, went down and down until he was hardly fit to be the companion of the filthy swine it was his duty to care for. His wicked life may have been near its end. He was a wreck in both body and soul. But this man, bad as he was, *repented*. Slowly and painfully he worked his way, and in the course of time he got back to that old home. The poor father had been watching, waiting, and hoping, through all these long years."

I hardly need mention to any of the readers of GLEANINGS the words this poor lost son used when he caught sight of that father. You, my readers, may each place them at the head of my talk for to-day, for an opening text. Now, this elder son, when he came in from the fields, where he had been at his accustomed honest labor, grumbled at the course his father had chosen. My good friends, this story has been before the world ages upon ages; and I do not know that I ever yet heard of a man who said the *father* did wrong in killing the fatted calf, and putting the ring on the hand of the son who was dead and is now alive again—the son who was lost and is found.

The parable of the prodigal son touches the matter in question from another point of view; and I confess that I myself never saw the connection until I heard this little story. Unbelievers, and perhaps others, reject the doctrine of free pardon and forgiveness of sin because they do not believe penitence is genuine. All such should consider that the great God himself has to be judge in such matters. Surely *he* knows whether the penitence is honest and sincere or not. I once called to see a man who was near death, who had been all his life intemperate and profane. He was in great agony of mind. He kept insisting that it would be a shame and a miserable farce for him at that late hour to talk about repentance. I turned to John 3:16 and read the familiar words. He became so excited and disturbed that he raised up in bed, and with tears and sobs choking his utterance he said, "Mr. Root, I have taken God's name in vain almost every day of my life. I have never tried to be any better. It is too late, too late. The idea is absurd that I can at this late hour become a Christian and have my sins forgiven."

I read different passages in the Bible; but, may God forgive me, it did not even occur to me to read that little story of the prodigal son. Finally he would calm himself a little, and ask me to read the promises over. He asked me to read them more slowly. I explained them to him again and again. I told him of the thief on the cross. Then he would brighten up at times, but Satan would then get hold of him again, and he would declare that a just and righteous God *could not* consistently forget and forgive, and wipe away his sins. I was obliged to leave him. Next day I was told he was dead.

When I first studied geometry I was amused at the way in which they discussed problems by accepting an absurdity for the time being. I think my book read, "Let us suppose for the time being that a straight line is not the shortest distance between two points;" and with this basis they went on with the demonstration. Let us now suppose, for instance, that the Bible is not true, especially in regard to the prodigal son. Let us suppose that there is no pardon or help for the sinner who has been exceedingly bad. In that case, every last man and woman would give up after going a certain length. The down-hill road of vice would be easy, as it is now, but the up-hill road back to virtue would be cut off. The gospel of Jesus Christ would be virtually ruled out. There would be no such thing as exhorting sinful humanity to repent, and "sin no more." And yet how many there are who say sometimes, with a lofty toss of the head, "None of that kind of religion for me, if you please. I ask for simple justice." And some may say the elder son had it about right; and they may say with him, "What encouragement is held out to live honest and virtuous lives?" Yes, I have heard something like this: "You preachers would almost make out that it is better for a boy to sow his wild oats —get drunk and swear, and may be get into prison, so he can pose as a reformer, and be lionized." God forbid. While we do sometimes make a great adoo over a penitent thief or a reformed man, all the world recognizes that it is better to lead a clean, pure life from the start. All sin leaves its scars, and a certain amount of disgrace attaches to any one who has been recreant to the trust laid on him by his fellow-men. The old father replied to the elder son, "Son, thou art ever with me, and all that I have is thine." When a man *prides* himself on his upright life—when he *boasts* of his clean and faultless record in the past—he is guilty of another sin—self-righteousness. Of course, a good record is not to be despised; but we should give God the praise. It is our duty as followers of the dear Savior of mankind to rejoice at the sight of a clean pure life, and there is no inconsistency at the same time in rejoicing over every sinner who repents and comes back with the thought in his heart, even though he does not put it in words, "Father, I have sinned against heaven and before thee. I am no more worthy to be called thy son. Make me as one of thy hired servants."

NOTES OF TRAVEL

BY A. I. ROOT.

CATCHING BLACK BASS.

I have not done any fishing with hook and line, or any other way, for that matter, scarcely, since I was a boy. I believe that in boyhood, however, I used to be regarded as quite an expert. Well, one day we three made a visit to the lower rapids, where we had never been before, and we scattered about a little, each one selecting a place for himself. I remembered that, years ago, I used to have the best success—that is, in the little streams around my home—by going out alone by myself, slipping up very quietly to some deep pool and then dropping my hook near some overhanging rock, or where there was a sort of cavern in the water where the fish could get out of sight, and where they would be shaded from the heat of the summer sun. Well, I found such a place in the rapids, or at least there was a big rock where I had reason to believe there was a cavity under it. I dropped down my well-baited hook just over the edge of the rock. Almost instantly I pulled out a good-sized bass. He made such a determined effort, however, to get back into the water, that I had quite a time in securing him and fixing a place for him so he could not flop back into the stream. Another trouble, my standing-place was on the rocks, partly submerged, so if a fish dropped from the hook he was sure to get away; and, in fact, I lost two or three nice fellows before my companions came around. I did not really know what *they* were doing. In fact, I was too busy pulling out bass that weighed two pounds apiece to notice or think of any thing.

I had read somewhere that a humane way of taking fish was to kill them by striking them a smart blow between the eyes, which would cause them to die instantly. Well, I adopted this plan to keep my fish from flopping back into the water. After about half an hour the rest came around to see what I was at that kept me so still. Just as Ed looked around the corner I pulled out a bass more than twice as large as the best I had caught. He made my new pole spring so I was afraid it would break; and I was so fearful he would get away from me by some hook or crook that I fairly trembled as I lifted him out of the water on perhaps a yard or more of line. I had got him up safely away from the shore, but he finally made one great bound up in the air, and came down the length of the line with a sharp snap. The line did not break, for it was made of Canadian seagrass; but the hook tore out of his mouth. I dropped my pole, and did my best to hold on to his slippery sides; but after a big tussle he came out ahead, and I almost felt like shedding tears. Finally one of my companions called out, "Why, look here, young man! Aren't you getting pretty near the limit of the law? No one is permitted anywhere in these waters to catch in any one day more than a certain number of pounds of black bass."

I was pretty nearly up to the limit, without any question; besides, we had about as many fish as we could use before they would spoil. Five or six miles below these rapids there is still another one where a great company was preparing to utilize the power to be carried to the town of Orillia, about 20 miles distant. For days past we had been listening to the workmen blasting rocks; but it was toward the close of the day, and Saturday night, and on the morrow I was to start back home, so I reluctantly gave up the trip. Sunday morning I put in a plea for going to church; but the nearest church was about ten miles away. It was, however, close to the postoffice, and all hands decided we would have to go for our mail on Monday if we did not on Sunday. We were told that services commenced at ten o'clock, and I was very vehement that we get to church on time. Well, we did get there on time, and more too, because they have Sunday-school before preaching; but it took some pretty faithful paddling, as the wind was against us. When we reached the church I was quite fatigued. I had not had my morning nap either. Now, this little church out in the wilderness had only small windows away up almost over our heads, and not very many of them either. The transition from God's free sky, where I had been living for a week, to this little church full of people, was too much for me. The sermon was one of exceeding interest, right in line with one of my talks in a recent Home Paper. But in spite of all I could do I was soon nodding. My good friend G. at my side very quietly nudged me with his elbow, and I very quietly thanked him, making huge resolves I would not be so discourteous to the minister again; but it was not a bit of use, and finally Ed thought he would let me have my sleep out, thinking I would probably wake up and enjoy the sermon. But the close air was too much for me. I slept during almost all the discourse. Ed informed me later that the minister spoke about the disciples going to sleep when they should have been watching with the Master.

He reflected on them pretty severely, and looked right at me. I do not know but my companion said this just to worry me; and how they did banter me after service! Think of my great zeal to get up early, get the canoe started, and then urge expedition until everybody was tired out, and finally show my consistency by sleeping during the entire sermon, shocking the good minister, and perhaps the congregation, and not hearing a word of the discourse! Tommy, however, came to my rescue. He declared that my heart was all right, even if appearances outwardly did not so indicate it; and he said something to the effect that it is far more important that the heart be right than to have the outward appearances up to the highest standard, with a bad heart inside. This may all be true; but still I think if we take a little more pains we may have both—a pure heart inside and proper decorum, at least during religious services. If Mrs. Root had been there she would have given me a fan or some substitute; but somehow I did not think of a fan; and I do not know whether a fan would have been sufficient under the circumstances.

Now, I want to draw a moral right here: Whenever you are building a meeting-house, make provision for abundant ventilation. Down in Florida they have churches that can be thrown open like the open cars in our cities. But why not have more open-air meetings? Of course, there is difficulty in providing seats; but let the people carry shawls or blankets, and sit on the ground. I believe most of the Savior's sermons were in the open air. When we are out on an outing, if at no other time, why can't we have Sunday-schools and preaching outdoors?

After church, I confess it was with a sad feeling that I bade my two companions good-by and saw them start off in the boat alone. I watched them far out on Sparrow Lake until they became a mere speck. Ed had put his cornet under the seat, and just as I was almost ready to shed tears the familiar strains of music came floating off to us across the lake. "May God bless the boys in their outing!" was my prayer. I supposed I was a stranger in a strange land; but one of the boys at the boarding-house informed me he had read the A B C book, and that he had kept bees quite successfully for several years; so I was pretty soon at home again. The next morning I found another bee-keeper in the neighborhood who still has quite a pretty little apiary; but his mind is pretty well taken up just now with something else. He has recently started the finest hotel on Sparrow Lake. What do you think he calls it? "Uneeda Rest." It seems to me that is very appropriate. The shore is all clean white sand around the hotel. The water is as clear as any spring water. Men, women, and children are almost constantly playing in the clean white sand and clear water. It is Mr. J. W. Clipsham, Sparrow Lake, Ontario, who has the hotel and the bees.

Perhaps I should add, in closing, that I attended church again in the evening, and did not go to sleep. I had had a good big nap, stretched out on my blanket on the shore of Sparrow Lake, where I could draw in the breezes from over the water to my heart's content while I slept. After the evening service I apologized to the good pastor for my bad behavior in the morning.

To reach the boarding-house I was obliged to go two miles around the road or a mile and a half through the woods after dark. I went through the woods, and enjoyed it. On the way home I passed somebody in the darkness. We discussed the sermon; and when I found he was not a member of that little church I had quite a talk with him, and he gave me his hand in parting, and almost promised he would tell the pastor of the church what he had confessed to me alone in the darkness of the night; that he was pretty well convinced that he ought to be with that little band of Christian workers, right in the harness, and helping pull, away out there in the wilderness. I did not even learn the name of the man, and in the darkness I did not even see his face; but I went to bed with the feeling that the Sabbath was not entirely lost, even if I did, by my blundering, sleep during the morning sermon.

HIGH PRESSURE GARDENING

BY A. I. ROOT.

GREENHOUSE-BEDS; HOW SHALL THEY BE MADE?

While we were out in the wilderness Mr. Grainger mentioned a great range of greenhouses—in fact, one of the largest in the world, at Brampton, about 20 miles west of Toronto, and he said I must take a look at the great institution before I went home. I found the establishment as he said, covering with glass between three and four acres, and this with solid greenhouses, not plant-beds, as some of our florists are in the habit of counting their area. Mr. Henry Dale, the proprietor, died July 15; but so well were his plans laid for the new buildings, that the work has gone on almost uninterruptedly. He commenced in 1881, and he himself collected the material before his death for six new houses. Two of them are 840 feet long each—the longest greenhouses in the world at the present time, if I am correct.

Now, you would naturally suppose that one who did business on such a scale as this would leave no stone unturned to get at the very best methods. He purchased his glass in Ireland, his woodwork somewhere else, his piping at still another place; nails, putty, and every thing else, in a like manner. He tried to have the best the world produces in the way of materials, and then he aimed to take advantage of all new inventions and discoveries in the way of construction. He has tried two houses with the short slope to the south, such as was described by friend Slack a few months ago; but for his purpose—growing flowers, mostly roses—he did not think they offered sufficient advantage to be adopted on a large scale. His new houses are double span, running east and west. The glass is all butted. His men told me he would not have a lapped glass on the premises; and I was a good deal pleased to find he indorsed my ideas on the subject.

The different houses are not separated. They cover the ground entirely. The gutter between the different roofs is supported by an inverted U, the path being lengthwise under the gutter. This inverted U is made of gas-pipe, and conveys the drip under the floor out of the way.

What I wish to speak of particularly just now is the arrangement of the beds. The Dale people have decided on having the beds right right down on the ground—that is, raised only a little above the path where you walk, as I shall explain. Mr. Dale, like myself and many others, said some time ago that he wanted his beds made of something that would not rot out and fall to pieces in two or three years —no more wooden structures for holding the dirt for growing plants. Well, he decided in this way: Have your paths graded off level, just as flat as the floor of a room; then make your beds by laying three courses of bricks so as to make a wall clear around the outside of the bed, 8 inches wide and 3 bricks high. Now fill this bed with sand or some similar material, clear up level with the top of the bricks. Stroke it off with a stick so as to be as flat as a table. On this table lay tiles close to each other, crosswise of the bed. Let the ends of the tiles stick over the ends of the bricks into the paths an inch or two. The tiles in the middle of the bed lie loosely on the sand. The outside row — those that lie across the brick wall — are laid in cement; and on top of these tiles, right over the brick wall underneath them, a second row of bricks is stood up edgewise. These bricks are set very firmly and securely in good cement, and that is all there is to the bed. The bricks used seemed to me to be rather larger than common ones. They are very accurately made—hard and true and smooth. Now cover the tiles with your potting-soil clear up to the top edge of the bricks, and your bed is finished. The soil reaches from down between the tiles to the top of the bricks. There is, perhaps, four or five inches of dirt for growing roses or other stuff. I presume the roots will grow to some extent down between the tiles. Any size of tiles will do. The ones I describe are about 3 inches in diameter. These tiles insure perfect drainage.

The Dale people have tried sub-irrigation, but they do not like it for their work. One of the attendants said that, for rose-growing, one plant may need three or four times as much water as another. The only way to give each one enough, and none of them too much, is to water by hand with a hose. When I saw the men making the beds it occurred to me a single row of brick, even if set in the best cement, would get struck with something and knocked out of place; but when I got along a little further I saw that the heating-pipes, two in number, were around the beds the whole length of these buildings, right along by the side of this single tier of bricks. The upper heating-pipe is a little higher than the bricks, so as to be a protection. These pipes are supported about every four or five feet by means of suitable cast-iron brackets set in the cement and bricks when the bed is made. The two rows of pipe are, I should judge, 1½-inch pipe. The houses are all warmed by steam. The buildings are rather low, the gutter being just high enough to permit a man of average height to pass along the path unber the U's. There is another similar path under the ridge-pole of each house. Here you are with a bed that will never rot out, and I think the drainage will never become clogged. When the one who does the watering sees the water running out of the tiles into the path, he knows he has put on enough for the time being.

They have tried overhead heating, but have decided, at least for the roses, they want only the two pipes I have described.

I said the floor of the greenhouses was level. To secure a proper fall for the drip of the steam-pipes, and also for the gutters, I believe there is a little fall during the whole 840 feet. Having these houses so close together, with the roofs rather flat, produces some shading in winter, but I believe they think it is not enough to do any material injury. The frame of the greenhouses is all iron. The supports that go into the ground are all iron, so there is nothing to rot out. The sash-bars are of wood. There are no walls except clear to the outside, surrounding the whole structure, and these walls are of brick if I am correct. The ventilators run the whole length of these long buildings, and they are operated automatically by thermostats at regular intervals. The thermostat communicates with a piece of mechanism so that the water pressure does the work of moving the ventilators, and they have this arrangement so it works very satisfactorily. The ventilation (or temperature) of the whole range of houses stays just where they want it, without any manipulation. They find automatic ventilation all right, but not so with automatic watering. Brains and water must *both* be used in caring for the plants. The long beds of handsome roses, as healthy as roses can be, was ample proof of the wisdom of the management and construction.

In order to insure perfect drainage, so the beds should never by any accident become flooded, there is an underground passage large enough to work in below the paths through the houses. Through this passage the drip-water from the steam-pipes is carried, and they will always be accessible for repairs or changes. Three immense steam-boilers warm the whole plant. It might be economy in many ways to scatter the sources of heat; but they purchase their coal by the train-load, and an automatic carrier delivers it into a great bin in front of the boilers; and, if I am correct, an automatic feeder carries it into the furnace; so there are obvious reasons for having the heating-apparatus all at one point, and this point is below the general level of all the houses. The grounds outside for the accommodation of plants that do best in the open air are in full accordance with this great glass structure.

I shall be glad to answer questions in regard to any point omitted in my description, and I think it would pay in dollars and cents, many times over, to any one who is building expensive glass structures, to visit the Dale establishment.

ELECTRIC BELTS, ELECTROPOISE, "ABSENT TREATMENT," ETC.

In the *Practical Farmer* of Aug. 15, friend T. B. Terry takes your humble servant to task as follows:

> My good friend A. I. Root has been particularly down on the above ways of treating the ills that people have. In regard to a certain kind of electric belt, for example, if I remember correctly he told us in GLEANINGS that the best scientific authorities said they could not by any possibility do any good*, and then they were sold at an exorbitant price, many times what it cost to make one. Thus the poor sick man who got one was both humbugged and swindled. But now really, good friends, there must be another side to this question. To illustrate: At the very time when friend Root was condemning this belt in the strongest terms, the writer happened in the home of a man and his wife in a distant State. They were readers of GLEANINGS, and thus knew me and invited me to their home when I was attending an institute in their town. They were people of more than ordinary intelligence, and some 50 years old. They informed me that our mutual friend Root was all wrong; that the husband had been a great sufferer for years until he used one of these belts; that he was then well and all right. They showed me the belt, and were very enthusiastic in their praise of it. Do you think I said one word against the belt? Do you think I told them there was no electricity about it, and that they paid ten times more than they should? Not much, and I'll tell you why. I believe in accepting good from whatever source it comes. Now, what cured this man (for he was cured beyond a doubt)? His faith in that belt. The mind has a wonderful power over the body, probably many times more power than most people think for. And now, truly, don't you think one would have more faith in a belt if he paid $25.00 for it than he would if it cost only $2.00? Paying a large price impresses the mind of the buyer with its concentrated and marvelous power! Now, I am not upholding any humbug or swindle; but don't you see there is another side to the matter?

Mr. Terry and I can agree very well right here unless he *recommends* this method of curing people. These rascals have often urged that, if they did not charge a big price, the patient would have no faith and would not get well. Very likely they, and Mr. Terry too, are about right; but how about the man who pays $2.00 for an article and sells it for $25.00? If he is all right and *doing good*, why should not *all of us* go into the business? and, in fact, a great lot of people *are* trying to get into it all the while, especially when they see the palatial residences of such men as Francis Truth, and Weltmer, of Nevada, Mo., and others. Electropoise, however, goes away beyond this. They charge $25.00 for a thing that could be made for 25 cts., and they perform wonderful cures, just such as friend Terry describes; therefore A. I. Root is wrong. He should not object to a thing that is relieving suffering and helping humanity. Better *not* tell the poor man there is no electricity about the trap, even if you recognize it at once. But, hold on a bit. What has become of Electropoise that a host of people defended with such vehemence only a few months ago? So far as I can learn, the thing is not now advertised in any periodical; and I venture to say that the people who claim to have been cured of a long list of diseases by the senseless trap have now laid it aside and are *trying* to forget it. What is the *matter* with it now?

But here is something else from Mr. Terry:

> This brings to mind an amusing instance of being too smart in looking out for humbugs. Some fifteen years ago a man came along selling tin pails. In the bottom of each one, two strips of zinc in the form of a cross were soldered. He informed me that water could stand in one of those pails for years, and the bottom would not rust, and he laid it all to electricity, and made a very learned address on the subject. I promptly told him to go right along—that he couldn't humbug me that way. With pity for my ignorance and sorrow for his pocketbook he departed. About that time our tinner did a large job for us; and when I gave him a check he felt a little liberal, and, knowing that I did not smoke, he gave me one of these pails with a zinc cross in the bottom, instead of a cigar. I laughed, but took it. Now, we always have a tin pail standing under our pump-spout in the kitchen. We used tin because it was light, but the best pail I could get would rust out in a year or two. The new pail was put in use at once; and, friends, although it is a little tough to tell such a joke on one's self, that pail is still in use, and good yet after fifteen years.

This zinc-bottom tin pail is another thing entirely. Pieces of zinc have been soldered in the bottom of watering-pots for years past to prevent rusting. I first saw it in the *Scientific American* years ago, and it has been a long time in use. The zinc and the tin, with the water in the pail, make a weak battery, and as a rule the zinc will all be rusted out before the tin rusts very much. About ten years ago we sold such pails by the hundred. They were extensively advertised. We had one for two or three years under our kitchen pump. I have just asked Mrs. Root about it, and she says that, while it helped the matter of rusting, she would not put it as strongly as friend Terry. We prefer now a very light pail made of paper or some such material. It is varnished or enameled so that it is easier cleaned than any metal pail, and is, I think, lighter. Although the pails Mr. Terry describes were sold generally by hardware men and tinners ten years ago, there does not seem to be the demand for them now that there was when they were first introduced.

Permit me to copy a little more of what Mr. Terry has to say about absent treatment:

> We hear a great deal nowadays about "absent treatment." That is, a man in a distant place proposes to cure you, without giving any medicine, of any disease, no matter if you have been given up by the doctors. The writer will have to say that he has investigated cases where this seems to have been done. And it is not particularly hard to believe and understand it. If one man's implicit faith in a belt he is wearing causes his cure, why will not as strong a faith in what a man a thousand miles away says he can do have a like result? There are rascals, of course, who carry on this absent treatment; but after all there is a great principle of truth back of it which the world is getting some little hold of. Patent medicines owe their success largely to the faith people have in them. They are advertised in strong language. You are told that they are sure cures, and any amount of wonderful testimonials are given.

I heartily agree with friend Terry that a great principle of truth is back of all these things; and I do believe that we are on the verge of a great reformation in this matter of curing disease; but I do *not* believe tremendous lies (I think this is what Mr. T. means when he says "strong language") and whole-

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*I said they could not do any good unless it came through the *imagination*.

sale robbery (taking $25.00 for a thing that could be sold for 25 cents, or *one hundred times its real value*) are going to be the fashion. Would Mr. Terry wish to go into a business of this kind, even though he relieved suffering? Would he employ a physican who cured people after that fashion? God forbid! When I can not be cured without telling me great lies to accomplish the cure, I think I prefer to *remain* sick.

Terry's head seems to be pretty level, after all, for he says, in winding up:

> We sometimes smile at the ignorance and superstition of the colored people of the South. Will you please tell me how much more wise are the intelligent white people of this country, who swallow train loads of patent medicines, than the poor negro who carries in his right trousers' leg pocket the left hind foot of a rabbit killed in the dark of the moon, as a remedy for rheumatism?

Very good; but, dear friend Terry, are you, a "teacher in Israel," at least in farmers' institutes throughout the different States, going to keep *still* and let this folly and superstition go on? Are you still going to keep quiet, and utter no protest just as you did in the case of the electric belt?

I am well aware we are often told, "Where ignorance is bliss, 'tis folly to be wise;" but the bliss that comes from ignorance does not last very long. He who is cured of all his ills by the use of Electropoise finds it soon ceases to produce any effect. Then he must have "absent treatment," or whatever comes next after this is exploded; and, once more, what shall our teachers do amid this complexity of fraud and humbug?

SPECIAL NOTICES BY BUSINESS MANAGER

A $200 RED-CLOVER QUEEN AT LAST!

We finally have her, and she seems to be fully equal to our old red-clover queen of years ago. The colony of this queen has given one of the most remarkable showings on red clover of any bees we have ever had, notwithstanding the stock has been robbed repeatedly of young larvæ for queen-rearing. The queen in question is an imported one, and, therefore, of the genuine pure leather-colored Italian stock. We have been sending out daughters from her all the season, but we had not discovered her value until the clover season, second growth, came on, and then her colony so far outdistanced all the other 450, that she attracted attention at once. We have concluded we can not sell her daughters untested any more for 75 cents; but when taken with GLEANINGS we will sell them for $1.00; that is, to say we will send GLEANINGS one year, and an untested red-clover queen from this $200 mother, for $2 00; a tested queen of this same stock, and GLEANINGS one year, for $4.00; or a select tested and GLEANINGS for one year, $6 00. These queens will be sold only in connection with GLEANINGS. If you are already a subscriber your subscription can be advanced one year, or you can send the journal one year to some friend.

We expect a great demand for these queens, and therefore can only guarantee that the orders will be filled in rotation, and sent as fast as they are ready to send out. Those who send orders immediately will stand the best show of getting stock at once. We can not guarantee to supply, this season, select tested stock, as we may not have it, as such queens will necessarily be limited, but we *think* we can furnish all that will be called for.

It must be understood that these queens are not golden yellow, neither are their bees of the five-banded stock. They are simply leather-colored Italians whose mother came direct from Italy. Those who desire queens of this stock had better get them this season, as the queen may die this winter. At the present time we are setting aside some of her choice tested queens for next season, to test for our own use.

But we have sold hundreds of these same queens, not knowing their value until now, at the regular prices, and there must be hundreds of our subscribers and patrons who have some of this choice stock. You will be able to recognize it by the great gentleness, the leather color, and by the fact that it shows a special aptitude for red clover; and if you measure the tongues of the bees, if they are like that of our breeder you will find that they are extra long. If you have one of these choice queens you had better take particular care of her, as she may be worth much to you in the breeding of choice queens for your own apiary.

Special Notices by A. I. Root.

NO MORE SAGE SEED WANTED.

Thanks to our California friends, we have received all the sage seed, both black and white, we shall need for the present. In fact, some packages have been sent us without a word as to who they were from, or telling us how we shall pay for it.

DWARF ESSEX RAPE.

This is also just the season for the above. We have a nice stock of seed at 10 cts. per lb.; 50 lbs. or more, 9 cts.; 100 lbs. or more, 8 cts. per lb. We can mail a leaflet in regard to its cultivation, on application.

WHITE AND YELLOW MULTIPLIER ONIONS.

These never run up to seed, but simply divide and multiply. The yellow ones are sometimes called potato onions Quart, 20 cts.; peck, $1.00; bushel, $3.50. These are for the small ones; large size, one-half the above prices. Either kind may be planted in the fall.

TOP OR ACORN ONION-SETS.

These are also now ready to harvest; but I believe that, as a rule, they are not set out till spring. One reason for purchasing now is that they are almost always sold out before spring, and we have grown only a limited quantity this season. Prices, same as for the multiplier sets.

Add 10 cts. per quart for postage on all onion-sets when wanted by mail.

WINTER OR EGYPTIAN ONION-SETS.

This is the best season of the year to put them out, in my opinion. Price, quart, 10 cts.; 50 cts. a peck; bushel, $1.50. We have both large-sized and small-sized sets. The small ones will, of course, give you a greater number of onions; but the large ones will give you stronger plants. This kind of onion never fails to grow, is never winter-killed, so far as I can learn, and it will hold its own year after year, almost in spite of weeds or any thing else.

GRAND RAPIDS LETTUCE.

If you are going to grow lettuce under glass, you had better sow some seed in the open air right away now. By the time you get strong plants, well rooted and hardened off by cool fall weather, it will be just the right time to plant out in beds under sash or in the greenhouse. A very little seed will make you a great lot of plants, and there is probably plenty of ground vacant now where it is richest and best. In many places there is a good trade for nice lettuce Thanksgiving time; and between Christmas and New Year's it will sell almost anywhere, when people once get a taste of some grown as it should be. We have a big lot of seed that has been fully tested. An ounce is only 5 cts., and 1 lb. only 50 cts. If wanted by mail, add 1 ct. for the ounce, or 8 cts. for 1 lb.

POTTED STRAWBERRY-PLANTS.

So far as I can learn we are the only strawberry-growers in the world who send out potted strawberry-plants *by mail postpaid*. We do it, as I have frequently explained, by potting them in jadoo fiber. We expect the plants to reach you just as bright and fresh as they are when first taken out of the garden; and if put out in good soil they should take right hold and grow at once, put out new runners, and give you a nice crop of beautiful fruit next season. Of course, the ground must be rich, and you must keep the weeds away. The sooner you get them, the more chance they will have to grow this fall.

They are now ready to send out at 3 cts. each, or 25 cts. for 10, by express; or 5 cts. each, 40 cts. for 10, by mail. The following is our list of standard varieties:

OLD STANDARD VARIETIES.
Jessie.
Haverland (Imp.).
Bubach (Imp.).
Warfield (Imp.).
Sharpless.
Parker Earle.

NEWER VARIETIES.
Rio.
Marshall.
Wm. Belt.
Margaret.
Nick Ohmer.
Brandywine.

The new berry called New York will be double the above prices. This is much like the Sharpless, fully as sweet, and of rather better shape. The blossom is perfect. No layer plants at present except *Earliest*. Price of these, *postpaid*, 15 c. for 10; 85 cts. per 100.

CONVENTION NOTICE.

The second annual picnic of the Cayuga and Seneca County Bee-keepers' Societies will be held at Atwaters' Glen, on Cayuga Lake, Wednesday, Sept. 5, 1900. An interesting program has been prepared, and a good time is expected. J. W. PIERSON, Sec.

Bees at $1.00 per Colony,

with queen, in box. No hive or combs. Hive extra with no comb, $1,00. Bees furnished last of September and first of October. These bees are for feeding up for winter to make colonies, or to strengthen weak colonies. Orders filled in order received. Write for further information.

F. H. MCFARLAND,
Hyde Park, Vermont.

Queens.

Use No Smoke. **It is not necessary** with the **Sweetheart** strain of bees. A postal card or letter will bring my descriptive circular and price list of these **gentle hustlers** and other strains. I am booking orders for them now, which will be filled in the order received. Don't delay.

A. J. WRIGHT,
Bradford, Steuben Co., N. Y.

Root's Goods for California.

We have just received a large carload of sections, extractors, smokers, veils, etc., direct from the factory, and are prepared to supply bee-keepers with the same promptly. Do not send a long distance and pay high freights. Write for our prices.

M. R. MADARY, - Fresno, California.

WAR IN CHINA,

but in our large apiary of 500 colonies peace reigns supreme. You should try one of our ***Warranted Superior Italian Honey Queens,*** which we will sell for the next 60 days at 50 cts. each. These queens are usually sold at $1.00 each; but this special offer is to introduce one queen in each apiary in this country.

LEININGER BROS.,
Fort Jennings, O.

QUEENS. **GOLDEN ITALIANS.** Unexcelled for business, beauty, and gentleness. Bred from the best of stock obtainable. Untested, 50 cts. each until Nov. 1st. Tested, $1.00 ea. Extra fine breeding-queens, $2.00 each. E. A. SEELEY, Bloomer, Ark.

Italian Queens, the balance of the season, 50c; full colonies, $3 50.
MRS. A. A. SIMPSON, Swarts, Pa.

FOR SALE.—7 strong colonies in good hives and in fine condition, very cheap. Write me.
GEO. W. DIAL, Lockland, Ohio.

FOR SALE.—1000 lbs. of a No. 1 comb honey; also 1000 lbs. of extracted.
WM. MORRIS, Las Animas, Col.

SEE THE POINTS!

I have had fifteen years of experience in producing honey and rearing queens; and I am breeding queens from a queen procured last spring from J. F. McIntyre, of Sespe, California. He describes this stock on page 12 of Gleanings for Jan. 1st, as filling the supers when other colonies were actually starving. The drones in my yard are from excellent stock—such as that of J. P. Moore, of Kentucky. I rear queens by the Doolittle method, send them by return mail, and guarantee safe arrival, purity of mating, and satisfaction, at 50 cts. each, in any quantity. Money refunded if queens are not satisfactory. Send for circular.

L. H. ROBEY, Worthington, W. Va.

Black and hybrid queens for sale at 25c each.
T. N. BRIGGS, Marion, Mass.

Twenty-five more hybrid and mismated queens; mostly young. Last season's queens, 20c; this year's queens, 30c. B. F. AVERILL, Howardsville, Va.

I have 25 mismated and hybrid queens for sale at 25 cts. each, or 5 for $1.00.
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WANTED.—To exchange for something useful, fine homing pigeons, or Angora goats, the most beautiful of all pets, and most profitable stock on the farm. For description address
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WANTED.—Apiary in basswood belt of Wisconsin, to work on shares; will pay cash for same at end of season, if location suits.
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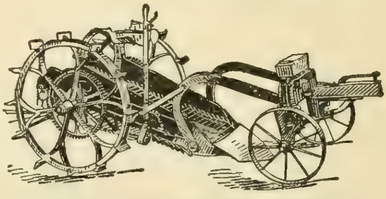

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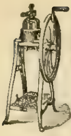

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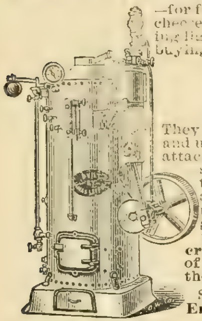

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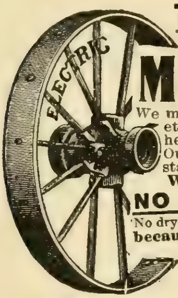

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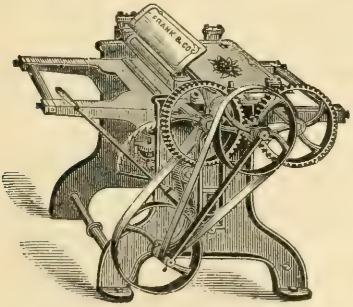

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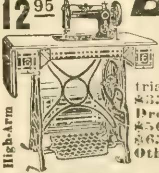

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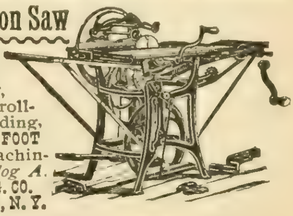

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Our largest orders come from old customers, which proves that our queens give satisfaction. We have 12 years' experience breeding queens; no bee-disease in our locality; queens are sent promptly by return mail, with safe delivery guaranteed.

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Warranted	$ .50	$ 2.75	$ 5 00
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put to a practical test by Mr. L. O. Thompson, a large honey-producer, of Weybridge, Vt., and here is what he has to say in a letter received from him last fall:—

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Just think of it! Three times as much honey as other strains! Little did I think, 21 years ago, that I should be able to secure such results.

Warranted queens, 75c each; 6, $4 00; 12, $7.00. Select warranted, $1.00 each; 6, $5.00; 12, $9.00. Safe arrival and satisfaction guaranteed.

I am filling orders by return mail, and shall probably be able to do so till the close of the season.

J. P. Moore, Lock box 1, Morgan, Pend. Co., Ky.

Marquette, on Lake Superior,

is one of the most charming summer resorts reached via the Chicago, Milwaukee & St. Paul Railway.

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For a copy of "The Lake Superior Country," containing a description of Marquette and the copper country, address, with four (4) cents in stamps to pay postage, Geo. H. Heafford, General Passenger Agent, Chicago, Ill.

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Albino Queens. If you want the most prolific queens; if you want the gentlest bees; if you want the best honey-gatherers you ever saw, try my Albino queens by return mail. Untested, 75c; warranted, $1; tested, $1.25.

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WHAT MORE?

Warranted queens with me means *good, prolific, purely mated* queens that give gentle bees that are good workers; if not satisfactory, replaced free. J. W. Hartman, Pickens, W. Va., writes: "You send me the best queens I ever had." One warranted queen, 60 cts.; 3 for $1 50 Select, 80 cts.; 3 for $2.25. Ordinary tested, 75 cts.; select queen, tested, $1.00; extra, $1.50; best, $2.00 upward. See late ads. and circulars.

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Our Bees are Busy

now carrying loads and loads of pollen and sweets from the flowers to raise the thousands of new bees for the coming honey crops. We are busy with the orders for Hives, Sections, Foundation, Comb to enable the bees to spread themselves over a surface for rapid work.

Many implements and fixtures to help the people to handle the bees conveniently and with profit.

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If interested in buying groceries, ask for our wholesale list, and it will also be mailed.

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ADDRESS

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Say! Improve Your Bees.

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We give free sel. test. queen for every $10, and a fine breeder for every $25 worth of orders at circular prices.

Best on Earth! A queen I had from you lived 3 yrs., and was the best queen I ever had, and did not swarm.—E. W. Brown, Morton Park, Ill., July 30, 1900.

Three select breeding queens, $2.75.

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W. H. LAWS, Round Rock, Texas.

Do you or neighbor bee-keepers want to sell CHEAP 50 or more colonies of *healthy* bees, light of honey? New York or Pennsylvania preferred. Simplicity 10-frame preferred. Describe with price. (Object is experimental.) W. L. COGGSHALL,
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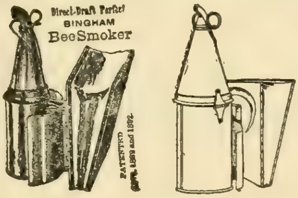
Along in Nov. or Dec., near the end of the year, many journals offer "the rest of the year free" to those who subscribe for the ensuing year—I am going to make this offer NOW. Perhaps you are thinking of subscribing for the Review next Jan.—send your dollar NOW, and get the rest of this year FREE. The sooner you subscribe, the more you get. For $2.00 I will send the Review the rest of this year, all of next year, and one of those Superior Stock Queens that I have been advertising. Queen alone for $1.50. Queens go by return mail. **W. Z. Hutchinson, Flint, Mich.**



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DEAR SIR:—Inclosed find $1.75. Please send one brass Smoke engine. I have one already. It is the best smoker I ever used. Truly yours,
HENRY SCHMIDT, Hutto, Tex.

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Bingham Brass Smokers

Made of sheet brass, which does not rust or burn out; should last a lifetime. You need one, but they cost 25 cts. more than tin of the same size. The little open cut shows our brass hinge put on the three larger sizes. No wonder Bingham's 4-inch smoke-engine goes without puffing, and does not drop inky drops. The perforated steel fire-grate has 381 holes to air the fuel and support the fire.

Heavy tin smoke-engine, 4-inch stove, per mail, $1.50; 3½-inch, $1.10; 3-inch, $1.00; 2½-inch, 90c; 2-inch, 65c. Bingham smokers are the originals, and have all the improvements, and have been the standard of excellence for 22 years. Only three larger ones brass.

T. F. Bingham, : : Farwell, Mich.

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Hives Full of Honey

such a poor year as this speaks, well for stock. We are breeding queens from such colonies, from queens with records *this year* and others. Untested queens, 50 cts. each; after Sept. 1, 35 cts. each. Tested queens, $1.00 each; after Sept. 1, 75 cts. each. IT WILL PAY YOU TO REQUEEN YOUR APIARIES AT THESE PRICES. Queens exchanged.

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We have the best-equipped factory in the West. Capacity, one carload a day; and carry the largest stock and greatest variety of every thing needed in the apiary, assuring BEST goods at the LOWEST prices, and prompt shipment. We want every bee-keeper to have our FREE ILLUSTRATED CATALOG, and read description of Alternating Hives, Ferguson Supers, etc. *Write at once for a catalog.*

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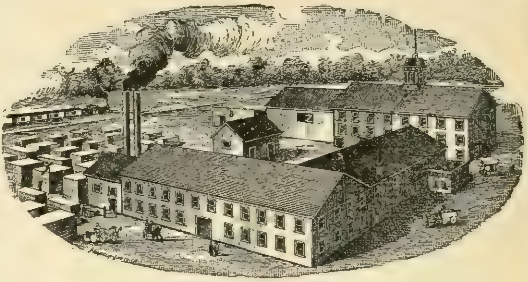

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Black and Hybrid Queens!

— IN FACT —

ALL INFERIOR QUEENS!

should be replaced with good young ones. With such queens you will have better success in wintering, and a strong colony for the earliest honey-flow. I am a honey-producer as well as a queen-breeder, and know the value of a good queen in a honey-hive. I have selected for my mothers, queens that I consider perfect in every respect. Their bees are large, gentle, and wonderful honey-gatherers. My drone-mothers are also carefully selected.

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Queens Go by Return Mail.

One untested queen, 50c; 12 for $5.50. One tested queen, $1.00; 6 for $5.50; 12 for $8.50. Write for prices on larger numbers.

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$10 Reward to the person who sends me the most money for queens between April 1 and November 1, 1900.

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W. O. Victor, Wharton, Texas.

Queens! Queens! Queens!

Closing-out Sale.

Owing to other business, I wish to close out my present stock, and will make price very low for next thirty days.

Untested, each	$ .55
Untested, per ½-dozen	3.00
Warranted purely mated, each	.60
Warranted purely mated, ½-doz.	3.50

These queens are bred in full colonies, from home-bred and imported mothers. Have both light-colored and dark leather-color strains. If you can use any, order soon, or may not be able to supply you. Address

W. W. CARY,
Lyonsville, - Mass.

HONEY-JARS.

One-pound square, $5.00 a gross; with labels, $5.60 a gross.

Cartons & Shipping-cases

for all sizes of sections. Our cartons are of a superior quality of cardboard, but cost no more than others. Sample free.

Untested Italian queens, 60c. Tested, $1.00. Catalog free.

I. J. Stringham, 105 Park Place, N. Y. Apiaries at Glen Cove, L. I.

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Honey Column.

CITY MARKETS.

NEW YORK.—Rather warm yet to expect a large demand for honey; but trade is beginning to call for it; and as soon as we get the first cool spell, indicating fall weather, we may expect increasing demands. We quote comb honey: Fancy white, 16; A No. 1, 15; No. 1, 14; No 2 12@13; amber, 11@12; fancy buckwheat, 10@11; No. 1, 10; No. 2, 9. Extracted white clover and basswood are in demand at present prices, 7½@8; light amber, 7@7½; amber, 6½@7; buckwheat, extracted, no sale for at present. Beeswax, 28@29.

CHAS. ISRAEL & BRO.
Sept. 10. 486 Canal St.

BOSTON.—Our market has shown a radical improvement during the last ten days. Fancy white honey in cartons will bring 16@17; A No. 1, 15@16; No. 1, 15. Honey not in cartons, simply crates, one cent less. We strongly advise sending forward shipment as soon as possible, as stocks are light, and demand seems to be good for this season of the year. No change in extracted honey. BLAKE SCOTT & LEE,
Sept. 8. 31 & 33 Commercial St., Boston, Mass.

SCHENECTADY.—With the cool weather there is an increasing demand for comb honey. We quote No. 1 white, 14@15; No. 2 12@13; buckwheat, 10@12. No demand for extracted, except in fancy glass packages.

CHAS. MCCULLOCH,
Sept. 8. Schenectady, N. Y.

ALBANY.—Not much honey arriving; sold some good buckwheat comb at 11; think fancy white will bring 15@16; No. 2, 13@14; mixed, 12@13; buckwheat, 11. No extracted on hand yet. Beeswax, 27@28

MACDOUGAL & CO.,
Successors to CHAS. MCCULLOCH & CO.,
Sept. 10. Albany, N. Y.

CHICAGO.—Fancy white, 15@16; No. 1, 14@15; fancy amber, 12@13; No. 1, 9@10; fancy dark, 8@9. Extracted white, 7½@8; amber, 6¾@7; dark, 6@6½. Beeswax, 28. The market is in good shape for honey of all kinds, and this month is one of the best for its sale. R. A. BURNETT & CO.

COLUMBUS.—Good demand for all grades of comb honey. We quote white comb, 14@16; amber, 12@14.
Sept. 10. EVANS & TURNER.

MILWAUKEE.—The market does not present any very new features since our last. The receipts of honey, while they are not large, have been quite enough to supply the demand; yet we would advise our friends and shippers to ship us both section and extracted; extracted *now* will meet favor; and advise shipments. We now quote fancy 1-lb. sections, 16@17; A No. 1, 1-lb. sections, 15@16; amber or dark, 1 lb. sections, 12@14. Extracted in barrels, kegs, and pails, white, 7½@9; dark, 6½@8. Beeswax, 25@26.

A. V. BISHOP & CO.,
Sept. 13. Milwaukee, Wis.

NEW YORK.—Good demand for comb honey, all grades. Supply light, and arrivals sell readily at 15@16 for fancy white; 13@14 for white; 12 for amber, and 10@11 for buckwheat. Extracted in fair demand at 7@7½ for white; 6½@7 for light amber; 6 for amber, and 5½ for dark. Beeswax firm at 28

HILDRETH & SEGELKEN,
Sept. 8. 120, 122 West Broadway, N. Y.

DETROIT.—Fancy white, 15@16; No 1, 13@14; amber and dark 10@12. Extracted white, 7@8; amber and dark, 5@6. Beeswax, 25@26.

M. H. HUNT & SON,
Sept. 7. Bell Branch, Mich.

WANTED.—We are in the market for comb honey in either local or car lots. We especially desire to hear from parties in Pennsylvania, New York, Wisconsin, and Michigan, having white clover and basswood. In writing, state quantity and price.

EVANS & TURNER,
Town St., Corner Fourth.

WANTED, HONEY AND BEESWAX.—We have a tremendous and growing trade in this line, and should like to hear from all having such goods to sell in any part of the country, with quantity, description, and lowest cash price.

THOS. C. STANLEY & SON, Fairfield, Ill.

WANTED.—Comb and extracted honey. Will buy your honey, no matter what quantity. Mail sample with your price expected, delivered Cincinnati. I pay cash on delivery.

C. H. W. WEBER, Cincinnati, Ohio.

WANTED.—Comb and extracted honey. State price, kind, and quantity. R. A. BURNETT & CO.,
163 South Water St., Chicago, Ill.

WANTED.—Quantity lots of comb and extracted honey. B. WALKER, Evart, Mich.

FOR SALE.—Finest grade alfalfa honey. Produced right at the Arkansas Valley Apiaries. Two cans, 120 lbs. net, $9 00. Also small pails and cans. Address
OLIVER FOSTER, Las Animas, Bent Co., Colo.

FOR SALE.—Basswood honey, both comb and extracted. Write for prices, stating amount wanted.
ED. WILKINSON, Wilton, Wis.

FOR SALE.—8000 lbs. A No. 1 clover extracted honey in new 60-lb. cans, two in a case, at $11.60 per case, f. o. b. here. Sample free.
E. D. TOWNSEND, Hubbardston, Mich.

FOR SALE.—1000 lbs. of a No. 1 comb honey; also 1000 lbs. of extracted.
WM. MORRIS, Las Animas, Col.

FOR SALE.—Choice alfalfa comb honey.
J. E. PRYOR, Eagalite, Colorado.

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For $1.30.—Gleanings and National Stockman and Farmer.

For $1.50.—Gleanings and Cosmopolitan or McClure's Magazine or American Gardening or N. Y. Christian Herald.

For $2.00.—Gleanings and Country Gentleman or Pacific Rural Press.

For $2.50.—Gleanings and Review of Reviews.

For $3.00.—Gleanings and Scribner's Magazine or Scientific American.

SPECIAL NOTICES BY BUSINESS MANAGER

The low excursion rate alluded to in this issue was given by the Wheeling & Lake Erie and Grand Rapids & Pere Marquette Railways, the two companies uniting in making a low rate to Northern Michigan.

JUST AT HAND, A WHOLE CAR LOAD OF BEAUTIFUL COMB HONEY.

The freight alone was nearly $400.00; and total value nearly $4000.00. See prices below.

TIN PACKAGES FOR HONEY.

If you are one of the people who market extracted honey in small lots you will find our pails just what you want A dozen sizes and kinds to select from. We also furnish square cans—1 and 2 quart; 1 and 5 gallons. A single can or carload, as you wish. Write for prices.

HONEY-LABELS.

Do you use labels for your honey? Are they really attractive labels? If you do not you may be losing many sales because your honey lacks attractiveness. You can't expect to market your honey at the best price unless you use every care in putting it up. Send for our label catalog and see our 1, 2, and 3 color labels.

BUSHEL BOXES.

We have on hand at Key West, Fla., 13 crates of all-slatted bushel-boxes, 195 boxes in all, with nails for putting them together. To make prompt disposition we offer them f. o. b. Key West for $19.50, which is only 10c each. The present price is 14c f. o. b. Medina. This is a bargain for some one in the vicinity of Key West, or anywhere in the South.

GLASS HONEY-PACKAGES.

We have all sizes of Mason jars with aluminum or porcelain-lined cups. Also jelly-tumblers, two sizes; glass pails, four sizes; and self-sealing jam-jars. Besides these we still have the four sizes of square jars, which have long been on the market. Don't forget us when you need glass packages for honey.

WINTER-CASES.

Our winter-cases are made of thin lumber dovetailed at the corners, with telescope cover. The cost is only 75 cts. each singly, yet for convenience they are unsurpassed, and only excelled by the chaff hive in the protection afforded. Don't let your bees winter-kill or spring-dwindle when you can avoid it by using our winter-cases.

RUBBER STAMPS.

Have you ever thought how handy it would be to use a rubber stamp to mark your honey-cases, showing the grade? Then, too, if you sell in the home market you ought to have your name on the case so it would be returned. We make stamps of all kinds for all sorts of purposes. Let us send you our rubber-stamp circular.

HONEY.

We buy a number of carloads of comb and extracted honey each year. If you have secured a good crop send us your offer. You don't have to worry about the returns if you sell to us. If you have extracted honey, send sample. If you have failed to secure enough for your home market, let us supply you. We have honey engaged all over the country, and can ship direct from the producer, many times.

COMB HONEY.

We have just secured a carload of the finest Colorado alfalfa honey put up in 24-lb. shipping-cases, glass one side; honey guaranteed to average 22 lbs. to the case, which we offer in crates of 150 to 200 lbs. at 15c per pound. Will make special price on 1000 to 5000 lb. lots. We have already sold about 15,000 lbs. out of the car, and if you want any of this honey we ought to have your order by return mail. We consider it the finest comb honey we ever sampled, and at the prices we offer it, it will move quickly in this year of scarcity of good honey.

BICYCLES IN TRADE FOR HONEY, BEESWAX, OR CASH, AT $15.00.

We still have on hand a few of the National American bicycles, which we took in payment of account. These are standard wheels, and are listed at $30, but we got them at a very low price. While we have been selling them at $17, yet, rather than hold them over till next season, we have decided to let them go for the rest of the season, at $15 00. Each machine, before it leaves us, will be tested by A. I. Root himself, so that a purchaser may be assured that the wheel will run right when it leaves us. We do not claim these machines are equal to the very best high grades, but they are good value for the money. If you have honey, send sample and we will name you a price we will give in trade. We will take first quality of white comb honey or any grade of extracted.

CHOICE LOTS OF EXTRACTED HONEY.

We have secured a number of choice lots of white extracted honey which we offer subject to previous sale as follows:

Lot No. 17, 480 lbs. mesquite honey, in 60-lb. cans, at 8c per pound.

Lot No. 22, 500 lbs. clover honey, with a small quantity of amber probably fruit-bloom. This is now in Central Michigan; price 7¾c.

Lot No 29, four barrels of about 340 lbs. each, clover and basswood mixed. We offer this at 8c per pound f. o. b. shipping-point in Southern Wisconsin.

Lot No. 34, 2000 lbs. white-clover honey, at 9c f. o. b. shipping-point in Central Michigan. A very fine article.

Lot No. 35, 1200 lbs. very fine basswood, in 12-lb. cans, eight cans in a case; price 10c per pound f. o. b. Medina in case lots.

Lot No. 36, 2000 lbs. raspberry extracted, in 60-lb. cans, at 9c per pound f. o. b. Medina.

Lot No. 38, one barrel of 380 lbs. mangrove, at 8½ c. Will put this up in 60 lb. cans at 9c.

Lot No. 45, 4000 lbs. white-clover extracted, in 60-lb. cans at 10c per pound f. o. b. Medina.

THAT $200 RED-CLOVER QUEEN AGAIN.

We finally have her, and she seems to be fully equal to our red-clover queen of years ago. The colony of this queen has given one of the most remarkable showings on red clover of any bees we have ever had, notwithstanding the stock has been robbed repeatedly of young larvæ for queen-rearing. The queen in question is an imported one, and, therefore, of the genuine pure leather-colored Italian stock. We have been sending out daughters from her all the season, but we had not discovered her value until the clover season, second growth, came on, and then her colony so far out-distanced all the other 450 that she attracted attention at once.

We can not sell her daughters untested any more for 75 cts.; but when taken with GLEANINGS we will sell them for $1.00; that is to say, we will send GLEANINGS one year, and an untested red-clover queen from this $200 mother for $2.00; a tested queen of this same stock, and GLEANINGS one year, for $4.00; or a select tested and GLEANINGS for one year $6.00. These queens will be sold only in connection with GLEANINGS.

Although these queens have been offered only a week there is a great demand for them, and therefore we can only guarantee that the orders will be filled in rotation and sent as fast as they are ready to send out. Those who send orders immediately will stand the best show of getting stock at once. We can not guarantee to supply, this season, select tested stock, as we may not have it, as such queens will necessarily be limited, but we *think* we can furnish all that will be called for.

It must, however, be understood that these queens are not golden yellow, neither are their bees of the five-banded stock. They are simply leather-colored Italians whose mother came direct from Italy. Those who desire queens of this stock had better get them this season, as the queen may die this winter. At the present time we are setting aside some of her choice tested queens for next season, to test for our own use.

The annual meeting of the Northern Illinois Beekeepers' Association will be held in the court-house in Freeport, Ill., on Tuesday and Wednesday, October 16 and 17, 1900. All interested in bees are invited to attend.
B. KENNEDY, Sec.
Rockford, Ill., R. F. D. No. 5.

WHAT MORE?

Warranted queens with me means *good, prolific, purely mated* queens that give gentle bees that are good workers; if not satisfactory, replaced free. J. W. Hartman, Pickens, W. Va., writes: "You send me the best queens I ever had." One warranted queen, 60 cts.; 3 for $1 50 Select, 80 cts.; 3 for $2.25. Ordinary tested, 75 cts.; select queen, tested, $1.00; extra, $1.50; best, $2.00 upward. See late ads. and circulars.
J. B. CASE, Port Orange, Fla.

For Sale. Twenty-five colonies of Italian bees in new 8-frame hives with choice warranted queens at $2.25 per colony; must be sold at once to reduce our stock.
LEININGER BROS., Ft. Jennings, Ohio.

A half-dozen or more fine mismated Italian queens for sale at 25 cents each.
W. F. STUART, Ottawa, Kan.

Sharples Cream Separators—Profitable Dairying.

Wants and Exchange.

Notices will be inserted under this head at one-half our usual rates. You must SAY you want your ad in this department, or we will not be responsible for any error. You can have the notice as many lines as you please; but all over ten lines will cost you according to our regular rates. We can not be responsible for dissatisfaction arising from these "swaps."

WANTED.—To exchange for something useful, fine homing pigeons, or Angora goats, the most beautiful of all pets, and most profitable stock on the farm. For description address
ED. W. COLE, Kenton, Ohio.

WANTED.—To buy 500 bu. No. 1 dry rice popcorn.
GEO. G. WILLARD, 270 Pearl St., Cleveland, O.

WANTED.—To exchange for anything useful in bee business, tested or untested Italian queens from imported or golden mothers; bred 3¼ miles apart. Also want pure black-and-tan rat pup.
J. M. DAVIS, Spring Hill, Tenn.

WANTED.—A location for a feed and saw mill in some good enterprising farm district.
Address 216 Court St., Reading, Pa.

WANTED.—Situation as book-keeper, assistant, or clerk, by young man, good reference. Address
W. C. WITTENMYER, Emison, Ind.

WANTED.—Foot and hand power machine of either the Seneca Falls or Barnes make, second hand.
W. S. CARTER, Fresh Water P. O., Va.

WANTED.—To exchange a good new house and an acre and a half of land and a small apiary, for half cash and half labor on a fruit-ranch. A good chance for a poor man with a family to get a home in California, where good help is in great demand, especially during the fruit season. For particulars address E. B. BEECHER, Auburn, Placer Co., Calif.

WANTED.—To exchange 2 sets of Morse telegraph instruments, good as new, $7.50, for Hoffman frames, section-holders, fences, or any thing useful in apiary.
GEO. LENGST, R. F. D., Saginaw, E. S., Mich.

WANTED.—To exchange beautiful palms, any variety and size, direct from greenhouse, from $1.00 to $25 00 in value, for ladies' or gents' bicycle, or pure Belgian hares. Mention variety you wish.
FRED. HOLTKE, Irvington, N. J.

WANTED.—A partner to engage in the bee-business in Cuba. Having spent three months in Cuba last winter I intend to return there in October to start an apiary, and should like a partner who has had experience in the business, and who can put in some money or bees or both Offers solicited for 50 to 100 good sound colonies, delivered in New York City ready for export from Oct. 1 to the 15th. Address
S. E. BROWN, Irondequoit, Monroe Co., N. Y.

Wm. A. Selser, Honey Expert,

Office of the A. I. Root Company.

10 Vine St., Philadelphia, Pa.

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The Great Chicago Convention Report will appear in full only in the AMERICAN BEE JOURNAL. This alone will be well worth one dollar This report begins in the number for Sept. 13. You should read it. The greatest convention of bee-keepers ever held on this continent was that of the National Bee-keepers' Association, held in Chicago, Aug. 28, 29, and 30, 1900.

Read These Big Offers: We will send to a NEW subscriber for 1901, for one year (at $1.00), the last 16 numbers of 1900 FREE; or, if you want *only the 16 numbers* send us *20 cents*, and mention the fact.

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GLEANINGS IN BEE CULTURE

A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS

ILLUSTRATED SEMI-MONTHLY

Published by THE A. I. ROOT CO.
$1.00 PER YEAR
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STRAY STRAWS FROM DR. C. C. MILLER

A POOR HONEY YEAR in Germany is reported in Gravenhorst's *Bienenzeitung*.

HARRY LATHROP, p. 685, makes an interesting statement when he says, "I have fewer and fewer swarms." Now, Harry, please rise and tell us why. [Yes, yes, Harry! tell us the secret.—ED.]

THAT SULPHUR FUMES will kill worms but not the eggs of wax-moths has been orthodox teaching heretofore. Now J. A. Golden, p. 682, says they will kill eggs. How is it? [I do not know. Will Mr. Golden or some one else who does know please inform us?—ED.]

WHEN I TAKE a laying queen from a nucleus I give at the same time a virgin or a queen-cell in a cage (and, by the way, I use a better cage than the Miller cage), and confidently expect it to be received all right. But I wouldn't expect it if I didn't use the *pasteboard method*. [Now look here. Your Miller introducing-cage we have illustrated and described for years is well nigh perfection itself. I do not believe you have a better one. If you have, trot it out.—ED.]

THE SEASON is well along, but no word has yet been seen from Messrs. Brice, Taylor, W. Z. Hutchinson, *et al.*, saying that a case has been seen this summer in which the bees have of choice selected a too old larva for rearing a queen. Here's a simple thing that any one can try: Take away a queen; then watch whether the first queen-cells started contain small or large larvæ. Either give a proof that queenless bees are in such haste for a queen that they choose to their hurt, or else abandon the belief as a false tradition of the dead past.

IS IT NOT much more important to have bees with long tongues than to have red clover with short tubes? If a perfect success can be made with the clover, it will be of no use to me unless I can get farmers about me to sow the right kind of seed—a thing somewhat difficult. But if the long tongues are reached, I have the thing in my own hands, and am master of the situation. [Yes, long-tongued bees are much more to be desired than short-corolla-tubed clover for just the very reason you mention, and that is where we should concentrate our efforts as bee-keepers.—ED.]

THE PASTEBOARD METHOD of introducing is a big thing—a *big* thing. But some have failed with it. I know of two cases in which the bees didn't gnaw the pasteboard. I don't know how the thing was managed; possibly too few bees in the hive, or the cage in some way too far from them. [There is a right way and a wrong way to use the pasteboard. It should be perforated with small holes directly over the candy, or else it should be so narrow that the candy is exposed directly to the bees at its edges. If too thick or too wide without perforations, I should expect trouble; but the way we use the pasteboard we lose less than one per cent of the queens introduced—a good deal less than one per cent, says Mr. Wardell.—ED.]

IT SEEMS that the queen has nothing directly to do with swarming. (She may have every thing to do with it indirectly.) Here is something that points in that direction. When a swarm is issuing from a hive, if part of the bees issue from some opening not used as the regular entrance, the proportion of queens issuing through such opening is much greater than the proportion of worker bees. Formerly I kept a ¼-inch ventilating-space at the back of my hives. It was never used as regular entrance, but at swarming perhaps a twentieth of the swarm came out there, and perhaps a fourth of the queens. A strong proof that the queen does not directly incite swarming was a case in which a swarm issued with no queen present, she having been quietly removed a short time before the swarming.

E. E. HASTY'S ARTICLE, p. 681, is valuable. Perhaps its chief value lies in showing us the difficulty of developing red clover to fit our bees, and making us more intent on solving the more hopeful problem of stretching the bees' tongues. [I have been thinking of this matter since I prepared the footnote to Mr. Hasty's article; and the query that now comes to me is this: Is it more difficult to stretch bees' tongues than to turn the bands of the bees' abdomens, that are normally black, to yellow? The queen-breeders of the country have been successful in doing this, we know, and in perpetuating a race of bees that will duplicate themselves one generation after another. Now, then, is that feat any more difficult than to develop a race that shall have longer tongues than the average bees? J. M. Rankin, of the Michigan Agricultural Station, reported at the Chicago convention that he had stock that had distinctly longer tongues, and he expressed the conviction that the feat was not so difficult as it seemed.—Ed.]

G. M. Doolittle says in *American Bee Journal* some things that are well said. The man who sends to a queen-breeder in May or June an order for a select tested queen expecting it by return mail should understand the facts. "Not much headway can be made rearing queens north of latitude 42 degrees before about June 1." Count 12 days in the cell form 10 days to laying, 21 days before the first young bees emerge, and 5 days to select, and the first select tested queen is not ready to send out till July 18. Orders left over from previous year, and received in winter and spring, may make it impossible to reach such an order before August. An untested queen can be reached some three weeks sooner. [We very often get orders for select tested queens in May or June; but we have always had a feeling that, when orders were received at that time of the year for immediate delivery, it was assumed on the part of the purchaser that the queen must necessarily be of the previous summer's rearing; *for he ought to know*, if he is a bee-keeper at all, that it would be impossible to furnish tested and select tested queens from the North, of the current year, in May and June.—Ed.]

That footnote, p. 686, giving the preference to shallow brood-chambers for comb honey, raises a question. Perhaps three years ago, I was twice asked the question, "Why is it that sections over Danzy hives are badly troubled with pollen, while there is no trouble with other hives?" I replied that the Danzy hive had nothing to do with it—that it was an accidental matter entirely. After that I had two Danzy hives in use, and there was more pollen in each Danzy super than in 100 others, and since then it has been a question whether the shallow brood chamber did not favor pollen in sections. [That footnote on page 686 to which you refer does not give an editorial indorsement of shallow brood chambers. I did say that for some localities the scheme was all right, and that Mr. Danzenbaker had on file letters showing that more honey can be secured from shallow brood-chambers than from deeper ones like the Langstroth. We have also had a great number of letters to the same effect. For some localities, and for some people, I believe the shallow chamber has decided advantages, but I do not feel yet like recommending it for every one. With regard to pollen in sections from the use of such brood-chambers, I can only conclude that it is largely a matter of locality. You may, where you live, have a large number of pollen-bearing flowers, while your regular main honey crop is being gathered. Mr. Lathrop, Mr. Danzenbaker, and those others who appear to be silent on this matter of pollen (probably for the reason they do not have it), I should assume do not have an excess of pollen at the time their main crop is being gathered. I should be glad to hear from Mr. Danzenbaker, and from Mr. Lathrop too—in fact, from any one who has had experience touching on these points.—Ed.]

G. M. Doolittle says in *Progressive* that he tried the plan of giving bees free access to a large number of unfinished sections to clean up last fall, and the bees tore the combs so much that one-fourth of them were spoiled for baits. He calls it "the Dr. Miller plan," but it's the B. Taylor plan. The Miller plan is just the opposite: allow an entrance to the sections only large enough for one bee at a time to enter, which is very much the better plan when there are only a few sections. When one has a large number of sections to be cleaned, the Taylor plan is away ahead, and I don't understand how it should work so disastrously with Bro. Doolittle. [A good deal hinges on what Mr. Doolittle means when he speaks of having given access "to a large number of unfinished sections." I once exposed ten or twenty poor uneven combs containing honey to the bees just after the honey season, at one of our out-yards, when there were 80 colonies all producing comb honey. I think I never saw a madder lot of bees in all my life. The combs in question were *literally covered* with a lot of bees scrambling and tumbling over each other in mad haste to get a sip at the honey. Thousands of bees were also in the air that couldn't even get a smell, much less a taste, stinging right and left. It was impossible to do any work in the apiary, and it seemed as if our clothes were literally filled with stings. We hastily closed up our work for the day, and went off with our hands in our pockets, with a resolve that we would never try it again. When any one talked with me about letting bees help themselves to unfinished sections in a wholesale way, I thought he was next thing to a fool; but I have recently learned that the bees must have unfinished sections in such numbers so that there will be no scrambling and tumbling over each other to get a taste of sweet. If 500 to 1000 of them were exposed in the apiary in a shady place, I venture to say that Doolittle would have very little trouble, and I would suggest that he try it at some future time, and report. If, in the case I have just mentioned above, I had given 50 or 100 combs, I do not think we should have had the rampage we did. But this is a kind of business that beginners should let entirely alone, and the question may be raised whether it might not be a somewhat dangerous experiment even for some expers. Ia any case the first trial of it should be at an out-yard remote from a public highway.—Ed.]

PICKINGS FROM OUR NEIGHBORS' FIELDS BY STENOG

I schvets by day unt schibbers py night,
  Unt trows on von extree qvilt;
But ven de sun's ope, I vear dat shirt-vaist,
  Unt tinks py colly I'm kilt.

* * *

AMERICAN BEE JOURNAL.

A great change in the appearance of this journal has been made by Mr. York. A new heading, very tastily designed, graces the first page; and instead of reading-matter a half-tone of Mr. Eugene Secor fills the rest of the space. It seems there will be no more reading on the first page, but a picture of some prominent bee-keeper. Some might think the change would effect a saving; but the expense of the cut is fully equal to that of the reading-matter. The idea is an excellent one. The issue for this week gives a half-tone of E. R. Root.

* * *

Almost an era in apicultural literature is introduced by Prof. A. J. Cook, who is writing a series of reviews of bee-books—this time taking up Langstroth Revised. In speaking of Mr. Dadant's ability to undertake so great a work, Mr. Cook says:

> Mr. Dadant, as one of the ablest bee-keepers of the United States, and one conversant with the bee-literature of the world, was, without doubt, just the person to undertake this important work. I doubt if he has a rival in his ability in the direction of extracted honey and the production and use of comb foundation.

In the next paragraph, in speaking of Mr. Cheshire, he says:

> It is to be regretted that he gives Cheshire credit for illustrations which the latter took without credit from such authors as Schiemenz, Wolff, etc. But, of course, he can not be blamed for this. He also gives Cheshire credit for ideas which the latter also plagiarized. A copyist is always likely to run into error, especially a copyist who gives no credit. It is always dangerous to follow such a one. Mr. Dadant could not know regarding this, and so is not blamable for the blemishes. It seems questionable to criticise so excellent a book, but the mistakes as I have seen them are so few that I am bold to do so.

This whole review, even from the standpoint of physiology, forms the best reading of the kind I have found for a long time, and I think every bee-keeper should read it. In this line of writing in particular, Mr. Cook is a genius. A fine view of Langstroth goes with the article.

* * *

On the harvesting, storing, and crating of comb honey, Mr. F. A. Snell says:

> To have the honey in the best shape to sell, it should be removed from the hives as soon as all is capped over. The beautiful cappings are then white and very inviting. If allowed to remain long after being capped in the hives the cappings become darkened by the bees, and the appearance is injured.

* * *

The United States consul-general at St. Gall, Switzerland, in speaking of the adulteration of honey in Europe, says:

> The "dishonoring of honey," as it is called, is a growing art, and several successful establishments are now in operation, producing large quantities of this artificial honey for the market, and the product is in popular demand. The people seem to like it. It is cheap, and the sales are large. All sorts of ingredients enter into its manufacture, among which may be mentioned syrups, malt extracts of the lowest grades, meal of different kinds, and cornstarch.
>
> From a pound of bee-honey 5 to 10 pounds of "dishonest honey" are made so successfully that it sometimes requires an expert to discover the deception.

* * *

J. H. Martin's article, read at the California State Convention, on the necessity of new inventions in apiculture, is worth perusal. He says, "While working for extracted honey, our present method of removing each frame separately, and brushing the bees therefrom, and stirring them up to a high state of anger, may be classed as a primitive way of management. . . . A shallow super is required. If the cover is quietly removed from such a super, and a cloth saturated with a solution of carbolic acid is spread over it, the bees, having a dislike to the odor, will soon leave the super, and it can be removed." Mr. Martin says he expects the automobile to play an important part in the apiculture of the future. It can be used for a great variety of purposes in the way of furnishing power, and is not offensive to the bees as horses are. In speaking of suitable packages for small amounts of honey, Mr. Martin says he saw one lately that worked like a charm. The containing medium was made of sausage-stuffing, but he thinks this was evidently unfit. He says bee-men need a machine that will extract 100 lbs. of honey as quickly as 10 lbs. can now be extracted.

* * *

Mr. France uses auger-holes instead of common entrances because they are easily made, and are mouse-proof.

GENERAL CORRESPONDENCE

PRIDGEN'S SYSTEM OF QUEEN-REARING.

The Successive Steps by which he Developed his System.

BY W. H. PRIDGEN.

My experience in modern apiculture began about nine years ago. At that time I bought fixtures and made hives at once, using steam power to cut them out. As soon as I got the bees into frame hives the queen-rearing fever ran high. I secured the leading books treating on the subject, and all other information I could. After getting my bees Italianized, as well as those of my neighbors, I reared queens for dealers to some extent for a year or two, and then commenced advertising.

After trying the different methods I finally adopted Mr. Doolittle's, which I succeed well in carrying out, although it always took quite a while to do the transferring, having to adopt some means of marking the cups as the larvæ were put in, to avoid having more than one in a cup. But I did not follow the toothpick transferring long after the Jennie Atchley Co. gave to the public the plan of making cups on *pointed* pegs, and transferring to them the cocoons, larval food, and all, with tweezers.

Like all new things, I had to try it, but must admit that I was not very successful in getting the cocoons to fit snugly, but imagined I should finally succeed if any one could, as I liked the idea of using very young larvæ, which can not be transferred otherwise, and did not like tearing down nice cells to get jelly. In whittling down a stick to make the cups on, and fitting it to a piece of old comb, it took up a cocoon, and I do not think I finished it before making one of the little sticks with the end hollowed out that I have since so successfully used. I am confident I can graft four batches with it while I would be preparing the cups with jelly and grafting one without it. Not long ago I tried transferring larvæ only without jelly, which were accepted all right; but I found it a difficult matter to lift them from a comb without shaving the cells down; and if I have to resort to that I can do the work in less time, and get more satisfactory results, by transferring the cocoons.

W. H. PRIDGEN.

The next change made was placing the cups in a straight row, and making a nursery to slip over a whole batch without detaching them from the bar, as I did not like to distribute the cells until ready to hatch, which is usually in 11½ to 12 days. Being provided with food, and a means of removing the queens as they emerged, I finally got into the habit of distributing the just hatched queens instead of cells, and find many advantages in so doing. Small and defective ones can be discarded. The occasional cell that fails to hatch cuts no figure, and nuclei will accept them that would often destroy unprotected cells.

It seems to be a question as to whether the virgins are injured thereby, which may be the case if allowed to remain caged very long, but if removed in from one to eight hours, in my opinion it is not as serious as giving cells to nuclei that can not maintain the normal temperature of a full colony.

The next variation in order was the construction, a year ago, of a set of pegs on the order of those illustrated in GLEANINGS for May 15, except the pegs had heads, and worked loosely in the bar, and the ends of the bar were beveled so as to vary the dip by carrying it endwise (see the *Review* for Aug., 1899, and May, 1900). With this arrangement, after being finished, the cups were all fastened with melted wax, at a single dip, to the bar, the pegs being turned and withdrawn one at a time.

A few months ago I constructed a wheel machine having a row of pegs on both sides of a wheel each of which has on a spool rubber that runs against a board made fast in the frame, giving the pegs a whirling motion while the wheel slowly revolves. It is so arranged that the depth of dip is changed automatically by simply turning the machine with a crank.

After completing it the idea occurred to me that there should be some way of attaching the cups to the bars without melted wax, which is accomplished by boring holes nearly through the bar, and slightly pressing the cups into them. I saw at once that the use of such a bar obviated the necessity of having a flat heavy base to the cups, and that they could be successfully made by the first and more simple plan by having the pegs rigidly fixed, and removing the cups, the dipping and removal to be essentially the same as described on p. 402, current GLEANINGS, though, as in other work, each one will learn to vary the operation to his liking. I have made them varying from 1500 to 2500 to the pound, and considered 1500 to the pound quite heavy; but according to samples recently received from the best authority, 625 is nearer right if one wants to handle the ripe cells roughly.

I suppose the depth should correspond somewhat with the size of the larvæ used; but after experimenting quite a while with different depths—varying from ⅜ of an inch to the natural depth and shape of ripe cells—I finally concluded that a fraction less than ½ inch was more in conformity to the wishes of the bees, and the size of larvæ used, than deeper; but I must be mistaken, as it does not correspond with the samples from Mr. Doolittle, which are the same as recommended in GLEANINGS, neither being advocates of the use of old larvæ in grafting, I believe; at least I would have no idea of touching the three-day mark, I am sure.

Creek, N. C., May 28.

[Believing the writer of the above, Mr. Pridgen, to be one of the most up-to-date queen-breeders in the world at the present time, I solicited from him a few facts concerning his life, from which I might prepare a biographical sketch. The statement that he prepared was written so modestly and so well I can not do better than to present it just as he wrote it.

Mr. Pridgen gives full credit to all the breeders who have contributed toward success of the modern methods now in vogue among the principal queen-breeders. But the foundation, as I take it, of his plan, is the Doolittle. This he has modified somewhat by the methods in use by the Atchleys, and then improved on so that he has at last developed a system that is as practical as it is unique. It is the most wholesale of any of them. Instead of making artificial cell-cups one by one he practically makes them by the hundred. Instead of attaching these cups to the cell-bars one at a time, he secures them in lots of a dozen or more. He does away with melted wax, does away with grafting by means of a toothpick, and in a wholesale short-cut manner takes out the cocoon, larva, and the food enveloping it, and inserts it all at one operation into one of his prepared cups, or goblets. Still more, as if the wholesale idea had not been carried far enough, he and Doolittle have conceived the idea of dispensing with cell-cups altogether by getting the bees to build cells in holes in a stick ; but more anon on this. I suspect that, if one gets thoroughly used to Mr. Pridgen's method, he will find it more rapid than any that has ever before been suggested. But at present our Mr. Wardell prefers, as I said in our last issue, the Doolittle method of grafting a larva and royal jelly by means of toothpicks.

LANGSTROTH

THE LANGSTROTH MONUMENT, PURCHASED BY BEE-KEEPERS OF THIS AND OTHER LANDS.

But this reminds me that another queen-breeder, who has been almost thirty years before the bee-keeping public, after having tried all the plans, I take it, agrees with Mr. Wardell in that he prefers drone-comb cell-cups ; but, unlike Mr. Wardell, and like Mr. Pridgen, he prefers to dispense with royal jelly, believing that the handling of it is a waste of time, and that as good results are secured without. But why need I tell more? for he has related his own story better than I can do it for him. See page 733 this issue.—Ed]

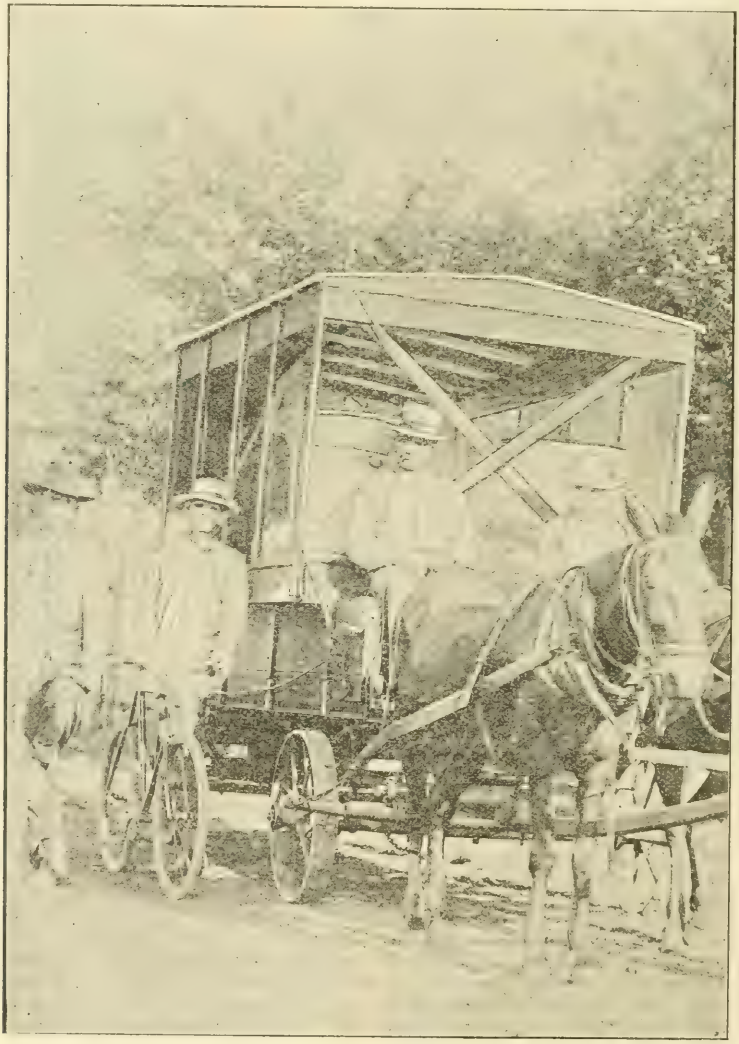
DESCRIPTION OF HYDE'S TRAVELING EXTRACTING-HOUSE.

Hyde's Queen-rearing Apiary.

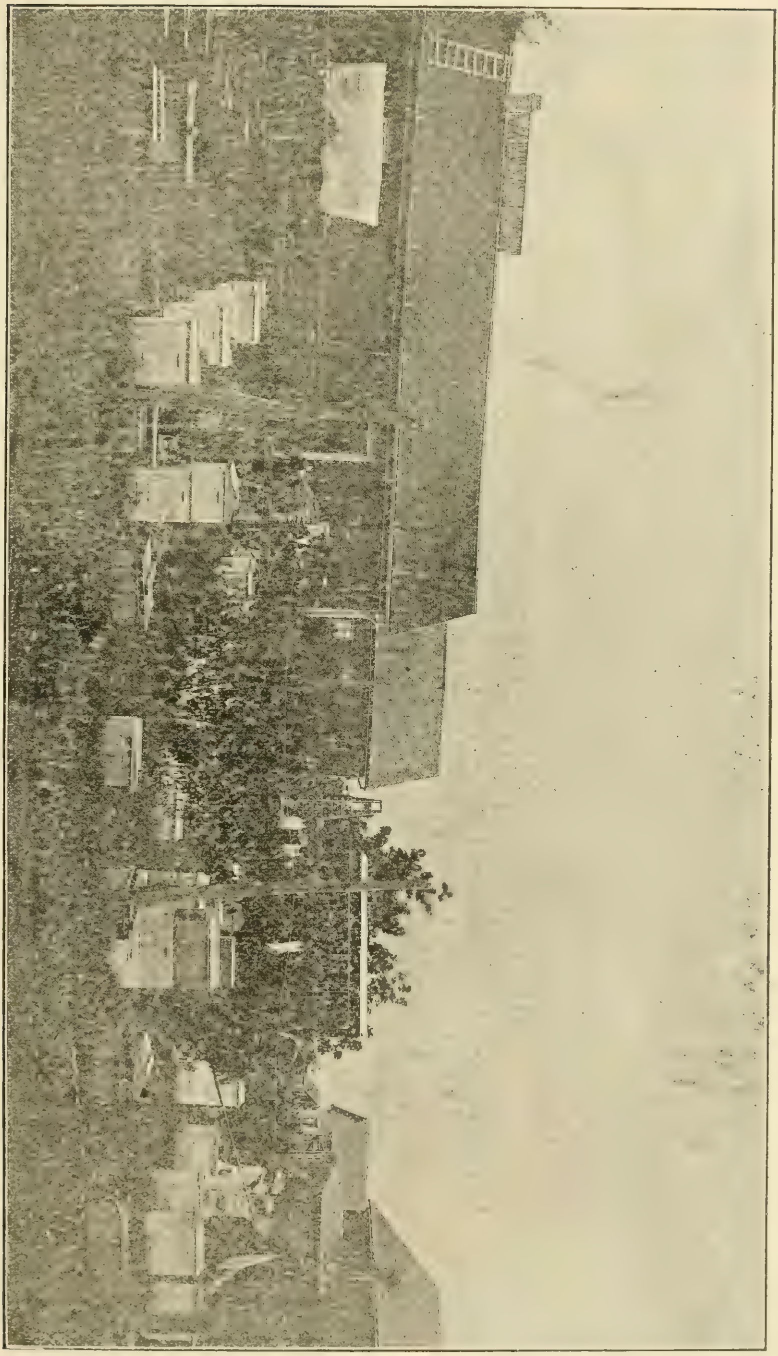
BY O. P. HYDE.

First we bought a low-wheeled Handy wagon metal wheels, 28 and 32 inches high, 4-inch tires. We made a frame out of 2×4 scantling, floored with 1×4. On the outside edge of this frame we nail and bolt pieces of 2×6. This makes a shallow wagon-box or platform for hauling bees, loose feed, etc. On this frame we have a rim made out of 1×12-inch lumber. This makes the completed box about 17 in. high, 166 in. long, and 52 inches wide. As this width of box will necessarily project outside of the standards, we cut recesses in the floor of the box at the proper place, and allow the standards to come through about 4 inches. The front of the box is made stationary so as to form a seat. The sides and ends of the box are made removable so as to allow us to use the wagon as a dray, or for hauling bees, etc., as referred to above.

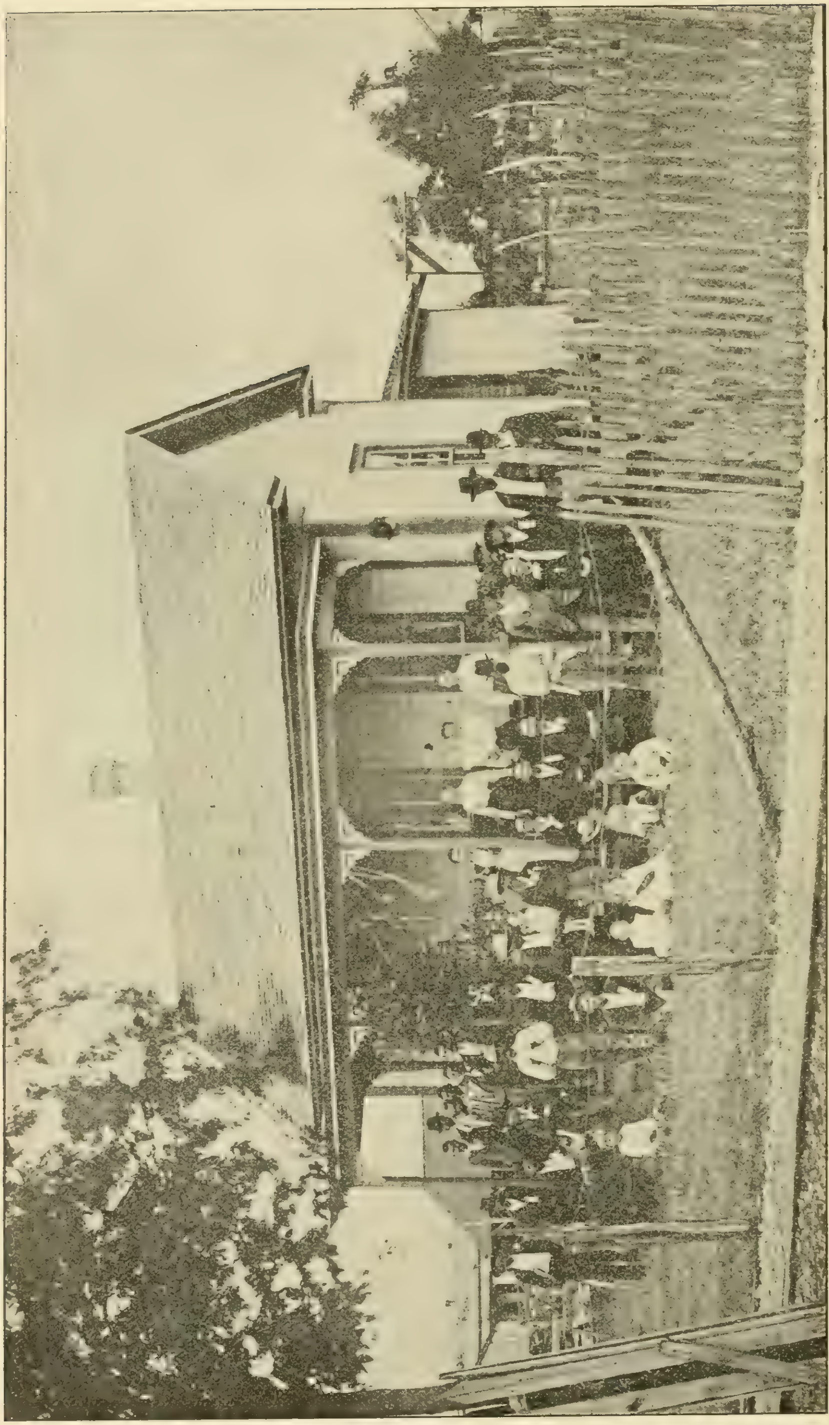
On top of the box we build the extracting-house First we lay five pieces of 1×3 crosswise of the box, one at each end, the other three at equal distances. These are 68 in. long, making a projection over each side of the box of 8 inches. On these, at each side,



O. P. HYDE & SONS' EXTRACTING-HOUSE AND OUTFIT READY FOR TRAVELING.

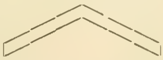


HOME APIARY OF O. P. HYDE & SON, HUTTO, TEXAS.



RESIDENCE OF O. P. HYDE; A COMPANY OF VISITING CENTRAL TEXAS BEE-KEEPERS' ASSOCIATION IN FOREGROUND.

we nail 1×12 boards flush with the ends of the cross-pieces. The three pieces of 1×3 that cross the bed are sawed out even with the inside edge of the plank. This forms a shelf on which we set cans, supers, etc. This is very handy. We then use five uprights on each side, and some at each end. These are 54 inches high, and at the top are raftered together with pieces cut thus :



On the inside of these uprights, at the top, is a runner of 1×6, also runners of 1×6 on the outside at the bottom. The remaining space is covered over with wire cloth tacked on the outside. This forms a natural bee-escape all around at the top. We leave a door in the back end, of proper width, swung on spring hinges. The roof is simply 10-oz. duck, heavily coated with thick white lead. The explanation of the construction will be better understood by a study of the engraving. Now for business.

In the front right-hand corner, on the shelf we spoke of, we place a Cowan extractor, which makes it high enough so that we can set a five-gallon open-top can under the faucet. We use a strainer made of 2×3 wood as a frame, and with a wire-cloth bottom to strain honey.

In the left-hand corner, opposite the extractor, we have a galvanized-iron tank that will hold 600 pounds. Over the top of the tank we spread cheese-cloth to strain the honey again. This will remove the finest particles of foreign matter. To protect the cloth we have constructed wire netting by having a rod of iron bent in a circle, and welded just large enough to drop inside the tank. We have short pieces of rod iron cut and bent around the rod, and also bent at top, to catch on the top of the tank. This lets the frame down about 8 inches from top of the tank. To this we fasten the netting, and on top spread the cloth. Near the bottom of the tank we have a two-inch pipe long enough to reach on the outside of the house end of the pipe, having a valve. Under the valve we place a box, on the box a platform scale ; on the scales a honey-can, and proceed to draw off and weigh up as we go. We use a cart to carry our supers of honey, etc., from the apiary to the house. We have two solid boards with an edge on them, a little larger than the hives, to set the supers on and to catch the drip. We used a Dadant uncapping-can in the center of the house. The frames are taken from the supers, uncapped, and passed to another box or frame to catch the drip. The frames go to the extractor, then back to the bodies, and are then returned to the hives. We take this extracting-house anywhere with extracting-oufit, camping-outfit, honey-cans, etc., with two horses.

On the seat is Mr. O. P. Hyde and his youngest son, Emmett ; on wheels is, nearest the wagon, his eldest son, Mr. H. H. Hyde ; the other is Wm. Cravens, an assistant.

HOME APIARY OF O. P. HYDE & SON.

This is a partial view. Only part of the 45 full colonies and 200 nuclei is shown. This is where their golden Italian queens are reared. This is where Victoria and a good many other costly queens are kept. This apiary, as well as two other queen-yards, is under the immediate supervision of that practical queen-breeder, H. H. Hyde. Near the middle of the apiary Mr. H. H. Hyde will be seen manipulating the colony containing his famous breeder Victoria, without veil or smoke. Mr. R. B. Leahy, of Higginsville, Mo., stands near him at his left. Still further to the left are two little girls. There are also several other visiting bee-keepers in the picture. In the background are the supply-house, extracting-house, barns, etc.

Hutto, Texas.

[Our artist has retouched the sides of the extracting-house in the picture in such a way that it does not correspond in one respect with the description. I refer to the bee-escape.—Ed.]

BELGIAN HARES.

The Construction of their Hutches; their Food; their Diseases, etc.; Continued from Last Issue.

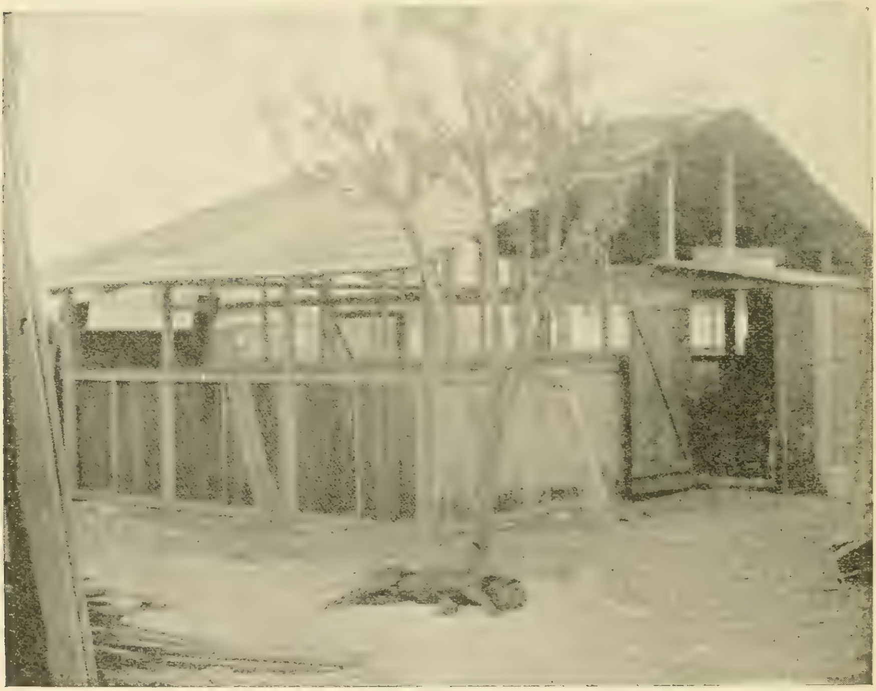
BY PROF. A. J. COOK.

The rabbitry, or place for the animals, need not be expensive. In the Eastern States, where the cold of winter is extreme, it will be necessary to protect against such inclement weather. In California little more than a roof is needed, though it must always be arranged so that the animals will be protected from the rain. The hutches, as their special pens are called, must also be kept dry. In constructing the rabbitry, arrangements must especially be made for most perfect ventilation. The very active life of a rabbit would imply good lungs and great necessity of good air. It is found that, if ventilation is not looked to, the lungs soon show a mottled appearance which surely indicates a disease. In California the sides of the rabbitry may well be omitted, except that arrangements must be made to protect against the driving storms. To secure this last, the side walls might project down for a distance, which also aids in protecting against the trying rays of the sun. Again, I wish to emphasize the importance of perfect ventilation. The air *must always* be perfectly fresh, and yet the animals must be protected against drafts. The hutches should be at least two feet wide, and from ten to twenty feet long. These should be surrounded by wire netting, and, if covered with screens of the same, the animals will be safe against the incursions of cats and dogs. Wire netting should also cover the floor, which should always be of earth. As we have seen, the Belgian hare is a rabbit, and so likes to dig. It is thus well that the females can get at the earth, and the wire gauze makes escape impossible. Some breeders cover the gauze with two or three inches of earth. It is well that the side walls of the runs should be five or six feet high, with a good hinge door in front. If the door does not reach to within one foot of the ground, which space is occupied by a wide board, it will be more convenient, as the frisky young will not escape when the door is opened. In the rear of the run is the breeding-box. This should be at least two and a half feet square, should open into the run with a hole large enough to permit the mother to pass through, and should have a movable cover to permit easy observation and easy cleaning. Some fanciers recommend sinking this breeding-box in the earth, and digging down on one side to permit entrance. I doubt if this is necessary—at least it is not much followed in actual practice.

Each person must exercise his own ingenuity in constructing his hutches and rabbitry, and must, of course, consult his ideas of taste as also his pocketbook. Some breeders use dry-goods boxes, and have no rabbitry at all. I presume even such an arrangement may, in careful hands, serve well the purpose. But I wish again to urge thorough ventilation, no drafts, and ample runways that the animals may have opportunity to exercise sufficiently to keep vigorous, and to develop firmness of muscle. I visited the rabbitry of our old friend, Mr. O. Clute, author of "Blessed Bees," the other day, and found that he had a number of animals in outdoor runs, but they were all protected by a double covered screen from the sun. Mr. Clute, who has many animals that score very high, also has a good rabbitry.

Neatness is another very important matter which should never be neglected by the fancier. The pens should be thoroughly cleaned at least once a week. The rabbits are naturally very cleanly animals. Health demands the absence of all filth. Any remission in this matter will surely be the fault of the breeder.

The food used in the rabbitry is easily procured, but should be varied. We may say in general that any thing that is fed to cattle, sheep, etc., or, indeed, eaten by people, if we exclude meat and grease, may well serve in the rabbitry. Alfalfa hay in California and Colorado, and clover hay in the East, are most excellent. It goes without saying that they should be well cured and never musty. The hay can be fed in a wire-screen manger, so as to prevent all waste and litter. These and, indeed, almost any plant or vegetable may be given green to the animal. In such case, however, great caution is requisite. Three maladies, each of which is sometimes serious, are most frequently produced by overfeeding green vegetables — bloat, dysentery, and scours. With proper feeding these may be all very largely prevented. The fecal matter should always come from the animals in little balls. If it is sticky, and runs together, it indicates indisposition, and almost as certainly injudicious feeding. The grains, especially oats, barley, and corn, are very desirable as forming a part of the food rations of the rabbit. Beans and peas are also fed with good results. In feeding these it is often found desirable to soften them with water. The ground or rolled barley is a favorite food with many of the



RABBITRY OF S. N. KEMP, LOS ANGELES, CAL.

California fanciers. Milk is specially desirable for the does during the nursing period. I have already referred to feeding green vegetables. It is sometimes safer to let these wilt a little before feeding. Vegetables wet with dew or in any other way should never be given. Potatoes, carrots, etc., are often fed with good results. I have already referred to the importance of ventilation and exercise. If we add to these judicious feeding I think we shall have met all the safeguards against disease in the rabbitry.

In my own home I have never had any medicines. We don't keep them. The presence of the doctor is almost as rare. The reasons, I am glad to give—great quantities of fresh air, wholesome food eaten at regular periods, and plenty of good exercise. This is a trio that'll make the goddess of health dance in any home. I can not too heartily recommend the same blessed trio in the rabbitry. I omitted to recommend in the above the excellence of bran, made into a mash, for the rabbits, especially the young ones. I would feed, as in case of all domesticated animals, only twice a day, and at just the same time. Such regularity is very important. I wish the human kind understood its importance, and acted accordingly. It would, however, be bad for the doctors. I would, also, feed just what would be eaten up clean, and very soon after feeding. One excellent fancier urges that food be always kept before the rabbits. I am sure this is never wise with any animals. Food always fresh, and not munched or slobbered on, will always be more appetizing ; and appetizing food is the only kind that man or animal should ever eat, if health is to be considered.

In handling the rabbits they should never be lifted by the ears, but rather by the loose skin above the shoulders. They should be raised with the left hand and supported in part by the right hand placed under the haunches. Unless raised quickly from the ground the free use of their feet will make it hard to handle them. Their hind legs are very strong, and their only weapon of offense and defense. They may often inflict a considerable wound by the use of these members unless one is cautious in handling them.

In mating the animals, the doe should always be placed in the buck's hutch, and not the reverse. The young, also, should be taken from the mother and placed in a different pen, and not the mother from the young. A few days before the young are born, some hay or litter should be placed in the nesting-box. As with sows, so here, it is very important that the mother be very carefully fed just before parturition else she may eat up her own young. This leads me to speak of water, which should always be given fresh at least twice a day, and should be where the mother can get at it at the time of bringing forth her young. The young will not need water during the nursing period, but must have it at all other times. Watering and feeding may be done in small earthen jars. These are cheap, and easily kept clean.

The rabbits are subject to very few diseases, all of which may probably be avoided, as I have already said, by precautions in the way of ventilation and feeding. One of the most common and, perhaps, the most serious of these diseases, is bloat. It is a stomach trouble, and without doubt can be wholly avoided by proper care of the diet. Green food in too great abundance is the cause. Dysentery and scours are also more or less troublesome, but can also be largely prevented if sufficient care is taken in the feeding. Snuffles also comes into the rabbitry to snatch away the fancier's pets. Good ventilation, with protection from drafts and chills, will usually prevent this trouble, which is only influenza. There are medicines recommended for all of these dis-

ANOTHER VIEW OF RABBITRY.

eases, but I believe very little in medicines, and would again urge good air, good food, and good exercise.

Of course, the fancier will wish to study up the business. The best book I have seen is that of Ernest Wilkins, "The Belgian Hare," of Wantage, England. Mr. B. C. Platt, of Los Angeles, Cal., has also published a very good work, "Bonanza Rabbitry." The price, $1.00, is exorbitant. "The Rabbit," by W. N. Richardson, and published in Syracuse, New York, price 25 cents, is worth reading. A little work, "The Belgian Hare," by Eph. Ruth, Poneto, Indiana, is sold for ten cents.

From what I have said, I think we are safe in the conclusion that this new industry has real merit. It will give us an excellent food at a very low rate. I doubt if any meat is more wholesome than the Belgian rabbit. I feel sure that no meat can be produced at a less cost. The business is safe, the equipment inexpensive, and the space required for a rabbitry is very slight. Therefore we may confidently expect that the production of Belgian rabbits will become more and more a favorite pursuit, especially with those who are not very strong, and so have more of care and thoughtfulness than of physical energy to give to their business.

Now a word about cooking the hares. They may be cooked just as chickens are prepared for the table—fried, roasted, stewed, steamed, or fricasseed. What is better than a good chicken pie? A Belgian-hare pie is equally good. Doesn't a good chicken-stew, with white flaky biscuit, satisfy the most fastidious palate? Well, a rabbit-stew similarly dished up is just as good.

Claremont, Cal.

[While I was in attendance upon the National convention at Chicago I roomed with the Rev. E. T. Abbott. Of course, we talked as only bee-keepers can, and one of the topics of our conversation was Belgian hares as a business to be run in connection with bee-keeping. Said Mr. Abbott, "I keep Belgian hares, and I keep them for sale; but I want to say to you that many extravagant statements are now being made concerning them that the facts will not warrant. There are bound to be many disappointed investors in this pursuit. It is stated, among other things, that they are almost free from disease, that they are very cleanly, and all that. The truth is, they are just as subject to disease as any stock; and if their hutches are not cleaned daily they will become positively nasty. One chap who called on me was very anxious to go into the business; but when he saw me clean out one of the hutches one morning he concluded he didn't want any Belgian hares, and I haven't seen any thing of him since. I tell you, when the selling of fancy stock at big prices is over, and there are no more suckers to buy at big prices, the fad will seek its level like every other good business. The growing of hares is all right. There is money in it, if properly managed. The meat is good, and the animals are enormously prolific; but the dear public should know the *facts;* and one of these facts is that the hares have a way of getting sick and dying before any thing can be done."

Prof. Cook, while he has painted the bright side, has also given the other side by showing the importance of *pure air*, *cleanliness*, and *exercise*, and that the rabbits have disease, and that such disease is often caused by neglect.—Ed.]

FINDING QUEENS.

The Use of Shallow Brood-chambers and the Shaking-out Function; Green's Queen-finding Box.

BY J. A. GREEN.

Several months ago the editor asked for methods of finding queens. Although some excellent ideas on the subject have been given, I think it will bear a little more light, as the ability to find the queen quickly is of the greatest importance, and a great deal of time is often wasted in looking for a queen that obstinately refuses to be found.

Few bee keepers, except beginners, need any instructions in ordinary cases. To them we have nothing to say except that the way to find a queen is to *look* for her, as J. H. Martin says. But occasionally you will find a lot of bees, or perhaps only a colony or two in an apiary, in which you simply can not find the queens by any ordinary method, at least not without consuming a great deal of time. Here is where a knowledge of "kinks" and short cuts comes into play. Moreover, if we can save even a few minutes' time in finding each queen, on an average it may amount to a great deal in the course of a season, in a large apiary.

I almost always use the "shaking-out" method of finding queens. The editor seems not to have found the plan a success, which is probably due to unfamiliarity. I do not believe this plan will ever be very successful when the brood-chamber is in only one story, especially if it is more than six inches deep, or has more than eight frames. When the hive is heavy with honey, as the editor says, it takes a great deal of strength to do a thorough job of shaking; and consequently this plan is not very well adapted to any but the double divisible-brood-chamber hive in shallow sections.

In practice I always smoke the bees out of the upper story, and then shake them out of the lower one. You must have a good smoker in good running order, and you must be prepared to work quickly and without any hitches or waste motions. Raise the cover of the hive, and blow a steady stream of smoke over the top of the hive—not in one place, but so as to cover the whole top of the hive as nearly as possible. Do not blow the smoke down so as to fill the whole hive with smoke. The only bees you want to smoke are the rear guards, but you must keep them on the run.

As the bees retreat, follow them up with smoke until you see that most of them have gone down into the lower story. Now, if you continue smoking them, or if you are slow in your motions, there will be a reaction; and some of the bees, having gone to the bottom of the hive and found no ready means of escaping there, will start for the top again.

Before this begins, take off the upper story and set it aside. You may be tolerably certain that the queen is not in it, though if the bees are yellow Italians she will sometimes remain there.

Without any delay, now blow a little more smoke over the top of the lower story, then at once pick the hive up and shake the bees out of it. As there is little or no honey in this story, it is easily handled. If you do not see the queen at once, shake the bees that are on the bottom board into the heap in front of the hive. Put the hive together and watch the bees as they go into it, using a little smoke to scatter any bunches in which she might hide.

I have said nothing yet about what you are to shake the bees on. If the ground is smooth and clean for two feet in front of the entrance you can get along without any thing else. It will be better, though, to lay down two bottom-boards or covers, a large piece of paper, or a sheet, to shake them on.*

Much better than any of these is the "finding-box" that I use. In its latest improved form it consists of a rim of boards — that is, a box without bottom or top, 20×40, and 5 inches deep. Instead of a bottom this has a sheet of perforated zinc fastened about midway between the bottom and top of the rim. On a level with this zinc, on one side, a strip an inch wide is cut out of one end of the box, the opening thus left being covered with perforated zinc.

On the upper edges a strip of tin is nailed, projecting inward a quarter of an inch. This is to keep the bees from crawling over the edges.

If the ground in your apiary is level, and all the hives the same height from the ground, you can make your box so that the zinc is on the same level as the bottom-board. Otherwise, two strips of strap iron bent at right angles, and nailed to the end of the box so that they may rest on the front edge of the bottom-board, will serve to keep it on the same level.

In using this finding-box the hive is lifted from the bottom-board and set crosswise on the back end of the finding-box before the bees are smoked down. When the bees are shaken into the box a large proportion of them immediately go through the bottom, where they remain, making it much easier to find the queen among those that remain on top.

The finding-box that I have used for the past four years, and on which I have found hundreds of queens, consisted simply of three wood-zinc honey-boards placed side by side with a lath nailed across the ends to keep them together, and with legs to hold it two or three inches above the ground.

I had six queens to introduce a few days ago. The queens they were to replace were in full colonies of hybrids, all working in supers; and as it was a showery day, all or nearly all the bees were at home. I took note of the time it took to find the queen in each, which was four, two, six, eight, six, and three minutes respectively, or an average of a little less than five minutes each. This covered the entire operation of opening the hive, finding the old queen, introducing the new one, and closing up the hive again.

This finding-box is almost as useful, no matter what kind of hive you have. If you can not shake the bees out of your hive all at once you can shake them off a frame at a time. Move your hive to one side and put an empty one in its place, with the finding-box in position in front of it. As you remove each frame, glance quickly over both sides of it. If you do not see the queen, shake or brush all the bees off into the box and place the frame in the new hive. In this way you combine the advantages of the ordinary method with all the certainty of this one.

Another method, of which I have made a great deal of use in past years, is that of driving. We often read of the exhibitions given by English societies, where prizes are given to those who can soonest drive out the bees and find the queen of a colony in an ordinary box or straw hive ; but the method appears to have become almost a lost art in this country. In transferring black bees from box hives I have found it an easy matter, generally, to find the queen while the bees were being driven out of the old hive. I could nearly always find the queen in this way in less time, on an average, than it would have taken to hunt her up in a frame hive in the ordinary way. Remembering this I have used the same method with success with frame hives and with other races of bees. I once bought a lot of bees which were a mixture of Cyprians, Syrians, and Italians. Any one who has ever tried these races does not need to be told that they were cross. Moreover, the queens were very shy, and the frames were very hard to handle (they were in what I believe you call Draper barns now), so that the queen would almost invariably be found on the last frame, or down in the corners of the hive somewhere. I tried finding the queen by driving, and found that I could almost always find them in less than half the time it took to find them by handling the frames. Neither did I get as many stings, nor were the combs exposed to robbers, as was more or less unavoidable by the ordinary method.

To find the queen in this way I would uncover the brood-chamber (in case it was a box hive, invert the hive), then place over it the hive-cap or any box about the size of the top of the hive, resting one edge on the back end of the hive, raising the front side with the left hand, so that I could see into the box and see the bees as they went into it. Then by smoking at the entrance, and pounding on the side of the hive, I would very soon have the bees moving into the driving-box, the queen being easily seen as she went up. I have not had any occasion to do any driving since I invented the finding-box, but it will be readily seen that it is a valuable adjunct to the driving process, as, if the queen is not found while the bees are going up, she can be strained out by dumping the bees into the box, just as though you were shaking them from the combs.

Now, some may be inclined to laugh at the idea of using such antiquated methods, and consider it only a waste of time to write about them or read of them. I do not advocate the driving process as a substitute for ordinary methods except in those cases where, for some special reasons, the combs are hard to handle or the queens hard to find; but if you will go at it intelligently, and once "get the hang of it," you will find, as I have, that there are many times when time and annoyance can be saved by its use.

Ottawa, Ill., Aug. 16.

[This article was accompanied by a note from Mr. Green, stating that while, for a few years back, he had been engaged in another line of business that occupied a good deal of his time, taking him away from bee-keeping, he was now going back to his old love. He was present at the Chicago convention, and showed his old-time interest and enthusiasm. He was always a practical writer, and during the time that he was engaged in other business he still clung to the bees, so that in the interim he has by no means become rusty. I am sure our older readers will be glad to see his interesting communications again, for he always was a writer who contributed something of value.

I am glad to be enlightened on this subject of shaking bees out to find queens; and one reason, perhaps, it was a failure with me was because I attempted to shake both stories or sections of the hive without previously smoking, as directed by Mr. Green. After I had tried in vain to shake out all the bees from two sections of the hive, almost "shaking the daylights" out of me, I concluded that, even if the queen could be found that way, other ways less back-breaking were more comfortable, to say the least. But Mr. Green does not say any thing about putting on bicycle pants-guards, or tucking his pants into his stockings to keep the bees from crawling up his legs. Whenever I do any shaking of combs I always like to provide against any thing of this kind.

But say, friend Green, it strikes me you have given us a valuable kink in your finding-box. Work? Of course it would.

After one reads Harry Lathrop's article on the use of shallow brood-chambers for the securing of comb honey, and this article from Mr. Green, he might almost come to the conclusion that the divisible brood-chamber hive was *the* hive. I am not sure but it is for many localities and for many bee-keepers; but I am very sure that, for some bee-keepers, it is most decidedly true that it is *not* what they want. Both the man and the locality, and to some extent the bees, may not be adapted to it.

It is indeed true that the drumming of bees out of a box, hive, or skep is almost a lost art with the bee-keepers of America. In England it is still practiced very extensively, and likewise on the continent, for the simple reason that bees are still kept throughout Europe very largely in the old-fashioned straw skep. Strange as it may seem, these bee-keepers will dequeen and requeen a hive almost as quickly as we can with movable frames. They can do nearly every thing except handle the combs. They can even produce extracted honey, but, of course, have to have supers at least with movable frames. But where the straw-skep method of bee-keeping is in vogue, comb honey is generally produced—if not in sections, in the old-fashioned glass boxes.

There! I do not know but our readers will begin to think that friend Green and I are almost going back to the old straw skep. Not a bit of it; but there are methods that were practiced in connection with that form of a domicile for bees, and are practiced with them yet, that may even be used to advantage with movable-frame hives; but, mark you, the frames must not be of the "rattlebox" type. They must be either closed-end or of the Hoffman style—something that will stand a good big vigorous shaking, or a drumming and pounding, when applied to the outside of the hive.

I have believed with many others that hives should be handled more and frames less, and in this I am backed by no less authorities than R. L. Taylor and W. Z. Hutchinson.

But this question will be sure to be fired at me, and I desire to anticipate it in advance: "Do you really mean to say that you indorse Mr Green's method of finding queens to such an extent that you would abandon the old way and would now follow his?" No, no! and I don't take it that he would recommend it, except in difficult cases. If I were using sectional brood-chambers, which I am not, I might use the plan to a considerable extent; but when using the full-depth Langstroth or jumbo frames, I think I should prefer to take my chances of finding a queen by "looking for her," as Rambler says—looking over the frames one by one.—Ed.]

NOTES OF TRAVEL IN EUROPE.

Continued from Last Issue.

BY J. T. CALVERT.

The impressions that I give of the people and their customs, as contrasted with our own, are of necessity very superficial, and may in many respects be very wide of the mark. I give account of only a few things which impressed me on the very hasty tour through England, Belgium, Germany, Switzerland, and France.

The more I see of these old countries, the more I am impressed with the supremacy of America commercially, because of her great advantage over these countries in labor-saving machinery. Here the effort seems to be to employ as many people as possible in accomplishing the work to be done, while in America the effort seems to be to eliminate human labor as far as it is possible by the introduction of machinery.

As we passed through Belgium and Germany on the way from Ostend to Brussels and Cologne, the first week of August, it was in the midst of harvest. Wheat, rye, oats, and barley were being harvested. The crop was very heavy with straw, four to six feet long. No fences or hedges were seen separating the land into fields. The people for the most part live together in villages. They undoubtedly have their individual holdings, for the different kinds of field crops are interspersed with small patches of about ¼ acre up to two or three acres, and the country looks like a patchwork quilt—a patch of wheat, one of rye, another of clover, one of oats, and another of potatoes, then a patch of sugar beets, a piece of plowed ground, and so on. In Germany the patches were very much larger than in Belgium. The grain is cut with a sickle or scythe or grain-cradle, bound in sheaves, and shocked up. Afterward it is drawn together on wagons or wheelbarrows, carefully stacked, and thatched over with straw to shed the rain. About as many women as men are seen working in the field, and the children also help. At one place I saw four or five children pulling a drag over the plowed ground. Very few animals are seen, and oxen are quite as common as horses for draft animals.

In a distance of several hundred miles, most of the way harvesting progressing on both sides of the train, I saw only one steam-thrasher, and that was an American-made machine. I saw one self-binder and one or two mowing-machines. Everywhere in the fields could be seen men and women cutting the grain by the old primitive methods of our forefathers, in use before the invention of the modern harvesting-machinery. In the small patches of Belgium the crops were much heavier than in the larger ones in Germany; they were also very free from weeds of all kinds, while in many of the larger patches thistles and other weeds were common. The homes of the people are, in outward appearance at least, neat and tidy, built of brick or plaster, with red tile roof, with flower-gardens in the yard or in the windows. They present an appearance of contentment. It may be the contentment of ignorance as contrasted with the higher average intelligence of America.

Quite frequently may be seen along the roadside a crucifix in a little case upon a pole called a shrine. The worship of the people in connection with these shrines, the churches, and cathedrals, seems a very near approach to idolatry, and yet we may not judge, for the fruit of their religion is quite as evident as in many of our Protestant churches.

The drinking of wine and beer is almost universal, and, indeed, many of our own company who at home are strong temperance advocates have here been induced to drink wine and beer because they say the water is unfit for drink. I have taken the water without stint, and have suffered no ill effects. I can not see but it is equal to any we have in America. We are told on every hand that it is dangerous to drink water, and that we must not do it. I had rather risk the pure water of the mountain streams than any concoction of man's device, in spite of what they say.

In the cities on the continent electric cars are found, though they are not as numerous as we find them in most American cities. Fares are based upon the distance traveled, and are quite low for short runs.

As we approach the border of Switzerland, in Germany, the farm buildings become more scattered instead of being grouped in villages. These buildings are peculiar in one respect; namely, the barn and house are under one roof. The part in which the people live is usually of white plaster or brick, while the barn part where stock or farm animals are kept is of wood, usually unpainted. All forms one building.

In Switzerland the houses are built with stone or plaster basement above ground, used for storage and animals, and this is surmounted by a wooden house, usually with an attic above, and with very wide-spreading eaves. The shingles are held on by stones laid in rows on broad strips every two or three feet up each side. There are a great many small out-buildings scattered over the fields and mountain sides. Fruit-orchards abound in Switzerland, but are very scarce in those parts of Germany which we passed through. The Swiss people put props under the limbs of heavily laden fruit-trees. In many cases the props are so numerous they look like the banyan-tree. They cultivate the steep precipitous mountain-sides. Where it is too steep to hold the earth from slipping down, stone terraces are built to hold it up; and when the earth is washed down by storms it is carried up again in baskets. Along the Rhine the mountain-sides are covered with these terraces full of vineyards. In Switzerland, on the mountain-sides grass is grown. It is cut, dried, and bundled with great labor, and stored in small sheds or barns. Stock is seldom seen grazing, as that is too wasteful. The people are hard-working, and toil under conditions which in America would seem intolerable; yet they seem to be happy and contented. The bright ruddy faces of the grown people as well as the children; the clear complexion and bright eyes, betoken health and happiness.

When passing through the mountain passes to-day I saw several sawmills driven by overshot water-wheels. The saw, about the size of an ordinary crosscut saw, works up and down in the form of a jigsaw. The log, when once set, is not turned, but is sawn through and through, leaving the bark edge. The boards from each log are kept together just as they are sawn; and wherever you see lumber piled it will be in the shape of the original logs, with the saw-kerfs out. In a modern band-saw mill, in America at least, a dozen large logs would be cut into lumber in the time taken to make one cut through a small log from end to end here. These Swiss houses, built of this mountain pine or spruce in the substantial way they are built, and left unpainted, will outlast many a well-built frame house in America. The better class of houses, not the best, have walls of solid wood four to six inches thick, made of square timbers doweled together and interlocked at the corners just as a log house is built. The ends are neatly finished, and project a foot or so beyond the interlocking point. This interlocking is so neatly done that it is difficult to see the interlocking joint. The eaves, both end and side, project beyond the walls three to six feet, sometimes more, with supporting brackets. Usually the upper stories project beyond the lower. Wood and other necessaries are often stored under cover of the eaves at each side of the house.

Wherever there is a rich garden plot in the valley it seems to be a community affair, like the farms in Belgium, judging from the many small plots of vegetables of various kinds, and many of the same kind growing in regular patches. There seems to be more community of interests, and a greater brotherhood, than we often see in American neighborhoods, and yet I believe that the same brotherly feeling and interest exists in many of the frontier settlements, as well as in other places in our own land. After all, human nature is much the same the world over; and under the uplifting influence of the gospel of the blessed God, as manifested in Jesus Christ, man's greatest needs are met. And the manifestation of this gospel in the lives of men consists in sharing our blessings with others, especially with those who are in need. "By this shall all men know that ye are my disciples, if ye have love one to another."

I will try to tell you in my next installment of notes of some of the interesting sights in art and nature that I have seen in these days of wonderful privileges.

CONVERSATIONS
DOOLITTLE

HOW LARGE YIELDS OF HONEY ARE SECURED.

"Good evening, Mr. Doolittle. It was such a bright moonlight night that I thought I would run over a little while and have a talk with you about large yields of honey. Do you believe some of the yarns got off in the bee-papers? I have some old papers lent me by neighbor Smith, and in one of them I see a report of over 600 pounds of honey from a single colony during one year. Can there be any truth in such a statement?"

"Well, friend Church, I think there is truth in the statement; for in 1877 I secured 566 pounds of honey from one colony of bees, and so reported to several of the bee-papers of that time."

"Whew! But wasn't that a big thing?"

"This was considered as a large yield at that time, and is still so considered by beginners and those who are not familiar with the records of the eighties, during which there were several yields made of from 600 to nearly or quite 1000 pounds from single colonies, the truth of which could not well be doubted."

"But how is such a thing possible?"

"To have you best understand I will tell ou something about that colony which gave 6 pounds in 1877. That spring I selected an average colony of bees and set it apart for extracted honey, intending, of course, to do the best I could with it. This colony was no better than half of the apiary would average, and was not helped in the least from any other colony. I built them up as fast as possible by the means usually employed, that of spreading the brood and keeping as warm as possible without artificial heat, as is frequently given in our bee papers and books. By the time apple-trees were in bloom the queen had brood in twelve frames, and from that source I extracted, according to my diary of that year, 16½ pounds, besides leaving them enough to tide over the time of scarcity between apple-bloom and white clover."

"You speak of 12 frames. Is not that a large hive?"

"Well, yes. But a few days after, these 12 frames, bees and all, we set into a hive four feet long, and a division-board placed at the rear of the combs. Once a week two more combs were inserted in the center of the brood-nest until the hive contained twenty combs quite well filled with brood."

"Say, Doolittle, aren't you yarning it? My best colonies do not have over seven or eight frames of brood."

"If you will allow me to go on with my story I think you will see through the whole thing soon."

"Excuse me. I'll try not to interrupt again."

"As white clover was now yielding honey, the hive was filled out with frames of empty comb, the whole number in the hive now being 32. I did not expect that the queen would occupy any of these last 12 combs, but in this I was mistaken; for before white clover was through yielding honey I found brood in every one of the 32 combs, which, if placed compactly together, was fully equal to 15 frames solid full of brood. Each frame gave fully 100 square inches, and each square inch gives 50 worker bees If exact, it would be about 55, but we will call it 50 as that figures a little more easily. Hence there were 5000 to hatch out of each of these frames every 21 days, or 75,000 from the 15 frames."

"My! but what a lot of them!"

"Yes; but you were to keep still. The average life of the bee, in the working season, is 45 days; so you will see that the queen could place two and one-seventh generations of bees on the stage of action to where one generation dies off. Two and one-seventh times 75,000 equals 160,700 as the number of bees in that hive during the basswood yield."

"O Doolittle!"

"If I had not been there myself I could have hardly believed it. It was a sight worth beholding when the bees were just starting out for the fields in the morning, for they would rush out like an army, and then, later, the entrance would be one living mass going to and fro. From clover they gave 186 pounds; from basswood, 287½ pounds; and from buckwheat, 76 pounds, making the 566 in all. Here are the figures in my diary of that year."

"Well, I should think you did do the best you could with that colony, as you said you you intended to."

"Now, suppose that, instead of securing this large amount of bees in one hive, I had not looked after them at all, but left them to take care of themselves, as the most of those who doubt these large yields do, what would I have had?"

"I am not going to answer that question. I agreed to keep still."

"The queen would have laid only moderately, so that, by the time the white clover began to yield honey, they would have had only about from 25,000 to 30,000 bees. At about this time the bees would have swarmed, thus dividing their numbers, while there would have been no laying queen in the old hive to lay eggs for the basswood and buckwheat workers for nearly or quite three weeks. Besides this, there would in all probability have issued one or more after swarms, thus dividing the bees still more, thereby defeating the prospect of any honey at all from the old colony, so that, were we to call 20,000 bees an ordinary colony as kept by the majority of bee-keepers, we should not be far out of the way."

"I think you are about right there."

"This would give but about 71 pounds per colony had this 1877 colony been divided up in that way, so that in reality that big yield, when brought down in this way to its proportion according to the number of bees there were in the hive, is nothing very great after all; for no one would call 71 pounds of extracted honey per colony, in a good season, an exaggerated report."

"Then you think that the number of bees there are in a hive has much to do with the yield of honey from that hive?"

"Most assuredly I do. And all bee-keepers should understand that it is *bees* that gather honey or nectar, not the number of hives which they have standing in the yard, all the way from weak to moderate in bees when the honey harvest arrives."

"Will a large colony do more in proportion than a small one?"

"Now you have touched on a point worth much to every one who desires good returns from his bees. A large colony of bees will do much more in proportion than will a small one, for the outside elements do not have that chilling effect on the hive of a populous colony that they do on a hive with few bees in it. Thus more bees go to the fields, and all work to better advantage."

"In a remark you made a little back you hinted at having the bees when the honey harvest arrived. What about this matter?"

"As I have often said before, and it will bear repeating over and over, the main secret in securing a large yield of honey lies in the securing of a large and contented force of bees at just the right time to take advantage of the honey harvest. If secured too early they are of little use, as there is nothing for them to gather; and if too late, they only become consumers instead of producers."

"How are we to know about these matters?"

"The same way you know about any thing. In connection with the bees the locality must be understood. If a person understands his locality, and secures his bees as we have been talking, he will have no cause to complain of his yield, if the flowers secrete honey. On these things depends our yield of honey."

"I am glad I called, for I not only understand how better to work my bees, but no longer doubt what seemed to me to be 'fish stories' before. Good night."

HEADS OF GRAIN FROM DIFFERENT FIELDS

QUEEN CELLS FROM DRONE COMB; WHY IT IS PREFERRED; DISPENSING WITH ROYAL JELLY.

I have just read in GLEANINGS from C. Russell, "How to Rear good Queens," and your comment. I will say here that this plan is not a new kink, as you express it in your comment. This was discussed several years ago, and given as a plan to rear good queens by removing the larvæ from cells started by black bees and replacing with larvæ from a choice queen. In fact, I think you experimented with it. I believe it is the only plan by which royal jelly is of any advantage to a transferred larva. I take the ground that just as good queens can be reared by the transfer method without royal jelly as with it, because, nine times out of ten, the bees will clear it from the cell. In rearing queens by the Doolittle process in a double-story hive, with queen below, it might be of service; at least, it is suggestive to the bees; but by my plan of rearing queens it is of no value whatever. I rear queens by removing the queen and brood for 24 hours, and then transfer larvæ into drone-cells fastened on to bars in a frame, as Jones described, and I get all the cells that I wish started, which should not be more than from 20 to 30 at one transferring, and then place cells after two days over a strong colony to be built out.

I have quit fussing over royal jelly. I believe I was among the first to advocate the royal-jelly plan, but have since discarded it. Of course, the stronger the colony that the cells are started in, and honey coming in, the better the queens will be. The objection to the plan that Mr. Russell advocates is that cells become mixed up so that some blacks or hybrids will get in with the batch of cells by oversight. The jelly of those cells is perhaps beneficial to a young larva, but otherwise I think not. If one will take the pains to try it he will find that, within two hours after larvæ are transferred by my plan, the larvæ accepted will be surrounded by watery fluid, and in six hours will be floating in jelly, and, as a rule, three-fourths of the transfer will be accepted. The queens I rear compare favorably with those reared in the swarming season; and when I attain to that I am satisfied; for I don't believe we can beat Nature, but attain unto it. I prefer the drone-cells to the wax-cups. From my experience it takes a good deal of wax to supply cups for a large breeder, saying nothing of the trouble of making. Every fellow has his plan; and when once familiar with it it is best for him, at least, if not the best way. J. D. Fooshe.

Coronaca, S. C., Aug. 9.

[I remember well how, years ago, we took out the larvæ of black blood and put in its place larvæ from an imported Italian queen, for I did it myself many times; but I do not remember that we ever exchanged larvæ, one for a younger one *of the same race*.

I wish we could determine positively who is right—Mr. Wardell, Doolittle, and others, who seem to think that the use of royal jelly insures a larger percentage of accepted cells, or yourself, Pridgen, and others, who hold the contrary view. We are getting nearer and nearer to the point of agreement; and I hope that in time there will be only one *best* method, while now there are apparently three or four that deserve respectful consideration from all careful breeders.—Ed]

A NOVEL METHOD OF TESTING THE LENGTH OF BEES' TONGUES.

I have just been testing the lengths of the tongues of my bees, and find that a colony of golden all-over Italians has as long as any in the yard. I proceeded as follows: Filled all three holes of a queen-mailing cage (Benton) with candy, mixed stiff, of the very finest sugar, and packed in quite hard. Then I covered the cage with wire tacked on firmly, and put the cage thus prepared down at the entrance of a colony of blacks who dug at it until they sucked up all they could get through the meshes of the wire. Then I took it to another hive and another, until all had been tested to see if they could lower the candy still more, but none could until I came to my pet colony of goldens (which, by the way, always have honey from I know not where). They at once began to dig out the food until it seemed they would lower it to the bottom. I was very careful, when moving my cage, not to press on the wire. I shall send you several of these bees to be measured. Will you kindly do so and report? The Swarthmore.

Swarthmore, Pa.

[It rather strikes me you have struck on a good plan. One thing it certainly does—it determines how far bees can really reach through ordinary wire cloth of a queen-cage. Now, then, the next thing is to determine how far it is from the outside of the wire cloth to the candy just below it. I suggest that you drop a pin through one of the meshes, head downward, so the head strikes the candy. With a fine-pointed pen just dipped in ink, mark on the pin just flush with the top of the wire cloth. Lay this down on a micrometer rule measuring off hundredths of an inch, and with a magnifying-glass count off the hundredths. I have already reported on the length of the tongues of the bees you have. Now, then, see what proportion the total lengths of the tongues bear to the actual reach of those same bees through the wire cloth, and report through Gleanings.—Ed.]

AN EXPERIENCE IN WINTERING; WHY THE BEES DIED.

As the time is approaching for preparing bees for winter I should like to have your opinion in regard to a trouble I experienced last winter or spring. I had my bees in good condition (as I supposed) late in the fall. I removed the two outside frames to give room for chaff division-boards. I placed a Hill device on top of my brood-frames; over that a light oil-cloth, and over that a chaff cushion, all nicely packed down. In opening them up in the spring I found bees in several colonies, all dead. They had crawled up and filled the space under the Hill device full—all dead, leaving plenty of sealed stores. I winter on summer stands. Colonies were all strong. I should like to know the cause and remedy. Thos. McGowan.

Lock No. 4, Pa., Aug. 23.

[It would seem as if you packed your bees in good shape to go through winter and spring; but the next time I would advise you to substitute, in place of enamel cloth, some porous material like carpeting, or, better still, burlap. If any thing, your bees do not have sufficient protection, as I take it your hives are simply single-walled and that the only double-walled space was the chaff division boards on each side. If the hives were chaff-packed all round, or, better still, regular chaff hives, and you used a good-sized cushion on top, I think you would find your bees would come out in good shape; but all outdoor colonies should be protected from the high winds of winter. A grove of trees, a barn or building on one side or that side, from which the prevailing winds come, is sometimes sufficient.—Ed.]

BELGIAN HARES; SOME OF THE DRAWBACKS TO THE BUSINESS.

Mr. Editor:—Your advice to bee-keepers, to proceed cautiously in the Belgian-hare business, is well taken. There are a good many kept in this section, and I have them too. The business is not all sunshine, as I have learned by experience and observation. The hares are subject to about as many diseases as chickens, and have a discouraging way of dying off sometimes in large numbers without any apparent cause. They require a great deal of care, and won't bear neglect, and thrive. Careless people, and busy people who are not careless, but have already about all the irons in the fire they can keep from burning, had better pass them by. Of course, they are very prolific, if allowed their own will, and the meat is very good to eat. The most successful breeder I know says if one wants hardy, good-sized stock, the does must have only four litters a year, and rear not over six at a litter. They must be protected from dogs, cats, and the young from rats. If confined in close quarters, only a few can be kept together, as they fight to kill. Their quarters must be kept clean and dry or they die. They require a variety of food and much care in feeding. A hare won't "live a month on 20 cents' worth of hay," and do well. There is no regular market for the meat, even in Chicago. Selling breeding stock at profitable prices is a business by itself that comparatively few can succeed at. Better keep more bees or chickens. They are much less trouble.

Can any one tell positively, if hares were confined in a bee-yard, would they disturb the bees and get stung? They would be handy to keep down grass and weeds among the hives. But a good fence would be required to confine them, extending eight inches or more into the ground to prevent escape by burrowing, and all trees and shrubbery would have to be protected from being browsed.

South Haven, Mich. H. D. BURRELL.

HONEY FROM OAK-TREES.

I send you some oak balls. We have a good prospect of a flow of so-called honey-dew from this source, which, however, is of fair quality. Some oak trees certainly have as much as five barrels of those balls Each one is coated with a white sweetish stuff. In some cases I have seen as much as 40 large drops on one ball. J. E. CHAMBERS.

Eden, Tex., Aug. 23.

[Similar reports have come now and then for years past. The honey from the oak-balls is seen in only certain localities, and it seems it is not a regular thing any where. We have had reports where great quantities of this honey or honey-dew were collected by the bees in a very few days in the fall of the year.—ED.]

WAX-EXTRACTOR REFUSE FOR SMOKER FUEL.

I saw an article in GLEANINGS about smoker fuel. Did you ever try the refuse from a wax-extractor? Get a good fire of rotten elm wood started, then put in some wax refuse and wood—that is, mix them after you get them started; and if good you may tell the readers of GLEANINGS about it.

Clayton, Mich. C. A. HUFF.

[Slum gum (the refuse from wax extractors) has before been recommended for smoker fuel in connection with something else. It burns readily because it is largely propolis and cocoons. It should of course be saved as it is just the thing to start smoker fires.—ED]

MERRELL'S SUPER-SPRINGS—A CORRECTION.

I see in GLEANINGS of Aug. 15 that you have received the super-spring I sent you some time ago. I am glad to see that you are favorably impressed with the simplicity and cheapness of the hair-pin super-spring, and I hope you will adopt the spring until some one gets something better. Why did you not untie the legs before you took the picture? The cut in GLEANINGS does not show up very well.

JOHN A MERRELL.

Edneyville, N. C., Aug. 25.

BISULPHIDE OF CARBON FOR KILLING ANTS.

We use bisulphide of carbon here to kill ants, prairie dogs, gophers, and any thing that *breathes*. The gas, after it evaporates, is heavier than common air. I place a wash tub over the ant-bed, then place a saucer half full of bisulphide under the tub. If good, every breathing thing under that tub, by morning, will be dead. It is adulterated with benzine, and is very explosive. K.

BEGINNERS' QUESTION BOX

BY E. R. ROOT

J. R. T., Iowa.—It is a little too late now (August) to expect bees to do much in the supers; but if you have some colonies that are still working on the sections, and one that is not, obviously there is something wrong with that colony. The fact that there was more than one egg in some cells would indicate that the queen is not what she ought to be. It is possible that the strain is poor, and should be improved by the introduction of a good new queen. Some strains show very little inclination to go up into the supers. We would either remove the queens and replace with better stock, or else run all such colonies for extracted honey, putting a frame of brood in the upper story to bait the bees above.

R. C. C., Col.—I do not know to whose albinos you refer; but I would say, on general terms, the color or the markings of the bees would not in way enhance their real value as workers. I have been disinclined to recommend bees with yellow bands, white bands, or bright bands, or bright colors. But I do favor bees that will work to produce results in honey with very little reference to the color or the markings. With regard to the virgin queen that had been clipped, I would say it would not have been possible for her to have been fertile. When you find two or three eggs in a cell, the prospect is you have a fertile worker there. See "Fertile Worker," in the A B C of Bee Culture, for further particulars

W. I. F. H., Pa. —The wages paid to bee-men varies all the way from $1.25 a day to $2 50. A good man at queen-rearing might be worth from $2 00 to $2.50 per day, but such a man would have to be of the very best.

I never advise any one to remove from his present locality to seek a better one. No place is far above another unless it is in Colorado and Arizona, and in such localities honey brings a lower price. Florida and California will sometimes show enormous yields, but such yields are apt to be followed by very poor seasons, making the business of bee-keeping even less profitable than that conducted in the East. The best yield of honey reported from any one colony was 750 pounds; but this is exceptional, as 200 and 300 pounds is a large yield.

EDITORIAL BY E. R. ROOT

THERE was an interesting and spirited discussion on the subject of square tin cans versus barrels, for shipping extracted honey, at the Chicago convention. I will tell you something about it in our next.

MANY of our readers will be interested to learn that his Highness, the Bey of Tunis, has conferred on Mr. T. B. Blow, of England, the decoration of the order of *Nichem Iftakar*, with the rank of officer, in recognition of his services as adviser on apiculture to the Tunisian government.

AT the Chicago convention a committee on the preparation of a score-card, consisting of N. E. France, Herman F. Moore, and W. Z. Hutchinson, was appointed. Heretofore there have been no settled rules as to how many points should be allowed for general display, how many for quality of the honey, how many for color, how many for evenness of cappings, and how many for the weight of sections, etc. I have no doubt that the new score-card will be of great assistance to the judges.

EUGENE SECOR FOR CONGRESS.

WE have just received the Forest City *Press*, in which we learn that Eugene Secor, of Forest City, Ia., General Manager of the National Bee-keepers' Association, has been finally prevailed on, through the pressure of friends and admirers, to stand as a candidate for Congress for his district. The above-named paper, in speaking of Mr. Secor for the position, says, "He is a man whom to know is to respect and admire — a man of genuine morality and of ripe experience. . . In public and private life Mr. Secor is a model citizen, possessing that manly poise of individuality that gains for him a hearing." Another paper, the Buffalo Center *Tribune*, says: "As to his ability, no one even questions that." The Forest City *Summit* speaks of him as "a man of sterling character, broad culture, scholarly attainments, and a large influential acquaintance throughout the district. . . He is a man of ardent literary tastes, and a writer of marked ability." We congratulate Mr. Secor, and sincerely hope that the bee-keepers of the country may have so earnest an advocate as he would be in the halls of Congress.

THE LANGSTROTH MONUMENT.

A SHORT time ago I announced that the Langstroth monument had finally been bought, paid for, and erected over the last resting-place of the remains of the father of American bee-keeping. In pursuance of a promise made to our readers, that we would show a picture of it as soon as it was erected, I now take pleasure in presenting it in half-tone on page 721 of this issue.

If I am correct, this monument was purchased wholly by the funds of grateful bee-keepers in this and other lands. It cost $300, is of granite, and, while it is simple and plain in general appearance, like the life of the remarkable man for whom it stands, it is a fitting memorial of the one who first placed bee-keeping on a new substantial and commercial footing.

A good many, previous to the time of Langstroth, saw the desirability of movable combs; and two or three came very near solving the problem, among whom may be named Huber, with his leaf hive; Debeauvoys, and Mr. Munn. But none of these conceived the idea of having the one thing lacking—a bee-space *all around* the brood frame, between it and the hive itself. Without this bee space, Langstroth would have taken no advanced step over those who preceded him. By the same invention—the bee-space—he also made it possible to separate the several stories of a hive.

If no granite shaft stood for his memory there would still be the movable frame, which would be an everlasting monument in itself; and that he was the first one to make movable frames practicable has been conceded by bee-keepers all over the world. Prominent among those who have made this acknowledgment are such men as T. W. Cowan, editor of the *British Bee Journal;* Edward Bertrand, editor of the *Revue Internationale*, of Switzerland; C. J. H. Gravenhorst, late editor of *Illustrierte Bienenzeitung* — all representative editors and bee-journals of England, France, and Germany. That such an acknowledgment so freely conceded abroad should be bestowed on an American, is an honor of which we may all feel proud.

The inscription, at my suggestion, was prepared by General Manager Secor. As it can not be read very easily in the half-tone, I reproduce it here in plain type.

INSCRIBED TO THE MEMORY OF
REV. L. L. LANGSTROTH,
"FATHER OF AMERICAN BEE-KEEPING,"

by his affectionate beneficiaries in the Art; who, in remembrance of the services rendered by his persistent and painstaking observation and experiments with the Honey-bee, his improvements in the Hive, and the charming literary ability shown in the first scientific and popular book on the subject of Bee-keeping in the United States, gratefully erect this monument.

Rest thou in peace. Thy work is done.
Thou hast wrought well. Thy fame is sure.
The crown of love, which thou hast won
For useful deeds, shall long endure.

BEES AND PEACHES.

WITH a large crop of peaches in many localities, and not much for the bees to get, as sometimes happens in some places, it is not a little strange that ill feeling has come up between the promoters of the two industries, although many of them seem to be unaware that this question has been pretty well discussed and settled. Bees seldom if ever pay any attention to sound peaches. When they are overripe, and beginning to rot, or when they are punctured by birds, wasps, or hornets, the bees are often on hand to suck out the sweet juices. They may be annoyance to the pickers sometimes, but I think we can prove conclusively they do not injure sound fruit. A strong argument in favor of the bees is that thousands of fruit-growers are also bee-keepers; in fact, intelligent fruit-growers are also satisfied they can not get the best results from their fruit-orchards unless they keep bees, or unless bees are kept in their neighborhood. Let me explain where much of the misapprehension comes in. Some years ago I bought a load of beautiful red-cheeked early peaches. I was surprised to think I bought them so low. In a few hours I discovered that many of them had little rotten spots which rapidly increased in size. I sorted them all over, and in half an hour more of them were affected with these little spots. Now, the bees discovered, about the time I did, that they could suck out the juices of any peach when this peculiar kind of rotting had just begun. I dropped my work, and spent considerable time in watching the peaches. Some were exposed to the bees, and the others were kept in the same place, but covered with a netting. The peaches commenced rotting in both cases alike; and I found that, to save my peaches, they would have to be used up at once in some way. A perfectly sound peach, so far as one could detect, would have these minute spots of decay in from two to three hours; and between noon and night they were so bad as to be unfit for sale. This is the kind of decay, I believe, that affects early peaches particularly, and it attacks some of the handsomest fruit I ever saw. Under such circumstances bees are blamed, when they have nothing to do with the trouble in the way of damaging sound fruit, although we can hardly blame one not posted in the matter for thinking the bees really destroy them. There have lately been several lawsuits in the matter. I believe some cases have been decided against the bee-keeper, and some in his favor; but it seems to me it is a fit subject for the National Bee-keepers' Asso'n to take hold of, especially in explaining matters, and having the fruit-grower fully understand that the bees have nothing to do with *causing* the fruit to rot. In one case in New York the owner of the peaches declared the bees sting the green fruit and cause it to rot; and the papers tell us he has even gone so far as to declare the bees have stung his *trees*, and thus caused them to die. His opponent declares the trees are afflicted with peach-tree yellows. Now, I do not know in regard to the laws of New York; but if a man in this State permits a tree with yellows to remain in his orchard he is criminally liable.—A. I. R.

THE CHICAGO CONVENTION.

THE great Chicago convention of the National Bee-keepers' Association has now gone into history. Mr. York, of the *American Bee Journal*, one who ought to know, says, "It exceeded any former meeting of the Association, there being at one evening session over 350 persons present;" and in speaking about the report which he will begin publishing in the next issue of his paper, he says: "It will likely be the fullest and best ever published of any national bee-keepers' convention." The regular stenographer whom Mr. York had engaged was unable to be present, owing to sickness; and as a consequence he was obliged to secure a court stenographer at enormous expense. I watched her pencil while she was taking down one of E. T. Abbott's rapid speeches. He poured forth a continuous stream of eloquence at the rate of a mile a minute; and yet the very moment he stopped talking, her pencil stopped pushing. I take it that, if she could take every word of Mr. Abbott, she could catch every thing, and doubtless did.

When I left for Chicago with my stereopticon outfit and slides I had just a little misgiving whether this feature of the meeting would be a success; but it succeeded beyond my own sanguine expectation — not from any thing *I* said, but because of the enlivening speeches descriptive of the subjects thrown on the screen from Messrs. Abbott, Mason, York, Baldridge, France, Weber, Benton, and Hutchinson. While the pictures were for the most part good, yet had one speaker held the floor for the evening I fancy the entertainment would have been tiresome. As it was, we had the most delightful variety from all the gentlemen named; and after some of the speeches there was a general cheering and encore.

Mr. Abbott introduced the poet laureate and General Manager of the National Bee-keepers' Association, Hon. Eugene Secor, whose picture was thrown on the screen. He spoke of the delightful poems which had emanated from Mr. Secor's pen; of the good work he had been able to perform in the interests of the Association; and as Mr. Abbott closed his happy speech there was a burst of applause. He likewise introduced, in the same delightful vein, Dr. Mason, Editor York, and E. Whitcomb — as their pictures were successively thrown on the screen. Mr. York introduced Prof. A. J. Cook and Dr. C. C. Miller. Mr. C. H. W. Weber, of Cincinnati, who had bought out the business of the late C. F. Muth, spoke feelingly of his acquaintance with Mr. Muth. He told how Mr. Muth had been known to have in his warehouse and on his platforms $75,000 worth of honey at a time, which he had bought of bee-keepers, paying cash for it. Dr. Mason, in his usual genial manner, said some very pleasant things of W. Z. Hutchinson and of E. T. Abbott; and then when some comic pictures were thrown on the screen illustrative of certain familiar scenes in the apiary he told how he had been there too. R. C. Aikin, of Colorado, President of the Colorado State Bee-keepers' Association, introduced W. L. Porter, of Denver; also Frank Rauchfuss and J. E. Lyon, prominent bee keepers of Colorado. N. E. France told something about his methods when pictures of his apiaries were thrown on the screen. M. M. Baldridge, one who has been, perhaps, connected with bee-keeping longer than most living bee-keepers, told of his early acquaintance with Langstroth when the father of American bee-keeping had just launched out into the new industry and put out his book, which, for real practical value and literary excellence, has never been excelled. In connection with the full-portrait view of Langstroth there was shown a picture of him as he was walking through a park in Dayton a year or so before he died; and finally there was shown in colors the Langstroth monument, where it now stands and which has been purchased wholly by small sums from grateful bee-keepers of this and other lands. Mr. Frank Benton, who is intimately acquainted with Capt. J. E. Hetherington, referred to his having been styled the "prince of American bee-keepers," and very properly so, and the most extensive bee-keeper, probably, in all the world. He dwelt upon his army record, of which any bee-keeper or soldier might well be proud; explained how his sword had been struck and bent by a bullet that would have pierced the Captain's heart while he was in the thick of the fight directing his men and a fine target for sharp shooters, and how he fought for the flag that thrills the heart of every American. At this remark, Old Glory was thrown on the screen in all its beautiful colors. General applause followed; for besides the loyal bee-keepers there were many old soldiers who had come to attend the great G. A. R. gathering.

On the last evening, Thursday night, Mr. Hutchinson, by the aid of the stereopticon, took us on a delightful trip among bee-keepers through Wisconsin and Michigan. He not only showed the pictures of persons he had met and of the apiaries he had visited, but all the hive-manufacturing establishments where he had visited, including some he had not seen.

THE WORK OF THE PURE-FOOD COMMISSION IN ILLINOIS.

AT the Chicago convention we had the pleasure of hearing from Prof. E. N. Eaton, chemist, and Commissioner A. H. Jones, of the Illinois State Pure-food Commission. Both of the gentlemen expressed themselves as being highly pleased to meet so representative a body of bee-keepers assembled for the purpose of discussing ways and means for putting down the adulteration of honey. They told of the work they had already begun; how they had compelled the dealers throughout Chicago (the very hotbed of adulteration only a few months ago) to sell all food products under their legitimate and real names. Samples of honey mixtures were brought in, showing in some cases the word "pure" had been crossed out by the dealer, and the word "imitation" in plain letters had been written in its place to conform to a recent law enacted at a session of their last legislature. All kinds of honey mixtures, imitation honey, glucosed honeys, if they are sold at all, have either been relabeled or else the word "pure" has been scratched out and the word "imitation" in bold letters put in its stead.

It will be remembered that the United States Bee-keepers' Association, under the direction of General Manager Secor, and through the personal efforts of Geo. W. York and Herman F. Moore, a well-known honey-man and an attorney as well, gathered up, a year or so ago, a number of samples of bogus honey. These were placed before the city prosecutor, and certain suits were begun against the venders of the samples. It created quite a *furore* among the dealers, for the Chicago papers were full of the matter for the time being; and although the first suit resulted in a verdict of "not guilty" for one of the parties on a queer sort of technicality before the justice, the result of this prosecution, while apparently a failure, was a far greater success than the Association could have hoped for in twenty years. How? Both Prof. Eaton and Commissioner Jones stated before the convention that the suits begun by the United States Bee-keepers' Association made such a stir in the city that it helped in no small degree toward the enactment of the new law now in force *and being enforced.*

If the Union or Association, as it is now, had never done any thing else we could feel that it had accomplished enough. There is nothing like agitation, *agitation*, AGITATION. In this day the brewers and saloon-keepers fear the work of agitation more than any thing else. Every bee-keeper in the land ought to rise up and hand in his dollar, if he has not already done so, because the Association has grappled his greatest enemy, the adulteration evil, *by the throat*, and it now remains for it to follow up its Appomattox.

THE LEAF-HOPPERS ON BASSWOODS.

WITH regard to certain insects being enveloped in gobs of mucus on some of the basswood-trees in our vicinity, and about which I wrote on page 532 of our issue for July 1, I would say that I sent samples of the leaves to the Ohio Experiment Station; and Prof. Webster, to whom the matter was referred, writes:

> *Mr. Root:*—Your letter to Mr. Green, and the express package have been turned over to me. There are insects in the glass jar, but none of them could have eaten the leaves of the basswood that you sent, nor could they have stripped the twigs of bloom. They might, perhaps, have punctured the blossom stems and caused them to fall off. The insects that are contained in the jar are a species of leaf-hopper which have not been before known to be destructive.
>
> In regard to canker worms they are likely to occur next year where they did this year; but you can easily manage them by spraying with arsenite of lead or disparene, at a strength of 3 pounds to 50 gallons of water. These are new insecticides that have only recently been placed upon the market, but you can easily arrange to secure them in ample time to apply next year.
>
> F. M. WEBSTER.
>
> Exp. Station, Wooster, Ohio, June 29.

JUST before the opening of the Chicago convention Mr. F. A. Converse, superintendent of live stock, and of dairy and agricultural products for the pan-American Exposition at Buffalo, introduced himself to a few bee-keepers who had assembled at the convention hall. He stated that he had come to learn the wishes of the various representative bee-keepers as to the nature and extent of the apiarian exhibits to be made at Buffalo. He said he was anxious to give bee-keepers what they sought, and that if he knew their requirements he would try to meet them as to the amount of space, location of the exhibit, etc.

OUR HOMES,

BY A. I. ROOT.

If thou turn away thy foot from the sabbath, from doing thy pleasure on my holy day.—ISA. 58 : 13.

The whole sentence from which I take my text comprises two long verses ; therefore I do not take the space to give the whole of it. It is a promise to those who strive to keep the sabbath as a holy day, and who refrain from making it a day of selfish gratification and avoid yielding to selfish impulses and promptings. It has many times been a question with me as to what I should or should not do on God's holy day. The question I have recently mentioned so often, "What would Jesus do?" has frequently come up. Jesus did not leave any cast-iron rules for us in regard to the manner in which we should spend Sunday ; in fact, he had more to say in the way of *rebuke* for the foolish ideas and traditions the Pharisees had laid down than he had in telling us exactly what we ought to do.

Last Sunday, Aug. 26, in consequence of a train being a good deal behind time I found myself on Saturday night, very near midnight, in the great city of Toledo. I was so tired I inquired for the nearest hotel. In the morning I found the First Congregational church, something over a mile away. Directions were given me how to find it by taking the street-cars ; but one of my first efforts on Sunday is to avoid doing any thing that requires other people to work, or prevents them from having a rest one day in seven. As I had plenty of time I enjoyed walking to the church. There I learned there were no exercises earlier than the sermon, at half-past ten. The church is located in the midst of a busy street, and an inscription on a great stone that constitutes a part of the tower informs us that the first church was built in 1844. It was enlarged in 1856 ; burned down in 1861, rebuilt in 1862, and taken down and rebuilt in 1877.

As there was considerable time before the services began, it was something of a question as to what I should do. I have acquaintances in Toledo, but I did not like the idea of visiting on Sunday, especially when it required the aid of street-cars. I have formed no cast-iron rules about patronizing Sunday trains or cars ; but I always avoid them when I can. I have recently read considerable in the papers about wickedness in Toledo. I have seen some very severe censures in regard to Mayor Jones and the way he lets saloons run rampant, nights and Sundays. My conscience did not trouble me when I decided I would look the city over and see how it looked Sunday morning. I am pleased to tell you I was surprised to see every thing so orderly and quiet. I did not succeed in finding any saloon that seemed to be open and doing business. Every thing seemed to be quiet and peaceable. Perhaps the bad element had not got up ; but I rejoice to know there is a time in the early morning hours on Sunday when such a city is comparatively still. There were many signs at the entrances to the saloons and beer-gardens, indicating a bad state of morals ; but there seemed to be no sort of *traffic* going on at that hour. I did witness one sight that gave me a great deal of pain, that I am going to mention further on.

I believe I was the first person to enter the church after the doors were opened. The janitor was very pleasant and obliging, and seemed to show a true Christian spirit toward a stranger. When the worshipers began to come in, one of them very courteously offered me the use of a fan, as the day was very warm ; another one handed me a Sunday-school quarterly, and they were certainly model people, *what there were of them.* We had a grand sermon, but there were not more than two or three dozen people present, and the church would hold a thousand, without the least difficulty. The minister spoke of a certain city of olden time that was walled in, and the people of it had no intercourse with other nations. It died of stagnation, and became an easy prey to its enemies. He said God did not intend we should live hermit lives, but that it was our duty to be about among the people of the world, to know what was going on at home and abroad, and to be *one* of the people. We may be *in* the world and in touch with it, but not *of* the world. Jesus prayed that his little band of followers, after his departure, should not be taken out of the world, but that they should be kept from the evil. It was in line with my impressions of the morning, and my conscience told me I was doing right to look over the great city, not from idle curiosity, and not to see its beautiful buildings and other structures, but to look over *humanity* with a loving interest and anxiety for its truest spiritual welfare.

After church we had Sunday-school. I had studied my lesson well in the quarterly that was loaned me, and thought that perhaps, as it was vacation time, I might be asked to take charge of a class. Some of the teachers, perhaps, would be absent. Now, do not think, when I tell you what I saw, that I am doing it to find fault or to make out that the world is going to the bad. I do not believe such is the case ; but I do fear that grave evils confront us. I do not think there were over two dozen people present, all told, at Sunday-school. By way of young people there were two boys in their teens and two little girls that might belong to the infant class. The Sunday-school room was a beautiful place, with all modern appliances, class-rooms with most comfortable seats, large windows for ventilation, plenty of blackboards, and pictures and charts in colors, but nobody to make use of them. The superintendent finally said we would all get together around his stand, and have a general review of the lesson. I do not wish to criticise, but it seemed to me the little gathering laughed it off, too much as only a piece of pleasantry, that nobody had come to Sunday-school. In his talk there was no recognition or word of encouragement for the two or three children who had come when everybody else stayed away. I came pretty near saying "stayed' at home," but I think the other expression is better. As an apology for no Sunday-school at all, the speaker said he could scarcely blame the children or anybody else for not wanting to come out on such a sultry day. Now, this might do very well, and we might go home and read and sleep, and think matters were not so very bad; but let me tell you, dear reader, during my rambles over the city that Sunday morning I found hundreds if not thousands of children of all ages going *somewhere*. Mothers were dragging them along for fear they would be late. Fathers were lugging those too young to walk, and small boys and girls were tugging at large luncheon-baskets. Where were they going? I did not ask, but the great crowd of humanity filled the large depot to such an extent one could hardly get in and out of the spacious doors. They were going on excursions somewhere—*Sunday excursions*. The reason there were no children out to fill that great Sunday-school room and other ones like it was, I fear, that their parents had taken them to go off on a Sunday excursion. Oh! I forgot to tell you there was one great church that was full of people—so full, in fact, that I could not get a glimpse of a seat anywhere. It was mostly full of *children*. Now, I do not know just what inducement was thrown out to get these good people (whole families) to be so devoted and faithful to their church and their worship. I discovered, after I stood on the threshold, that it was some sort of Catholic church—at least I judged so by some burning tapers and some things connected with their worship; and I wish to say on my own responsibility right here, "May God bless and guide our Roman Catholic brethren in their decision to let no excursion nor any other *outing* prevent them from being in regular attendance at the house of God."

My trip home was on an excursion ticket, and the conditions of purchase were that, when I started home, there should be no stop-off. I was to take the first train till I reached home. I have told you I prefer not to travel on Sunday; but in this case I would have to lose my ticket entirely or take a train at 2:15 Sunday afternoon. I did not think, and do not think now, I was called on to lose my ticket by waiting till Monday morning. The train was not an excursion train, and the road, the Wheeling & Lake Erie, does not, if I am correct, offer any lower rates for Sunday travel than any other day. As a consequence there were very few passengers, and my trip was very quiet and Sunday-like. It landed me 15 miles from home. There were particular reasons why I wished to be home early Monday morning. I found a chainless wheel in the town, that I could rent, and I could easily have made home before dark. In fact, I had once decided to go home on the wheel rather than stay over night at a hotel. In fact, I sat down to supper expecting to take my wheelride immediately afterward. I had been traveling for about a week, and had had scarcely a wheelride, and I confess I was in rather buoyant spirits in anticipation of the fifteen-mile trip just about sunset. But conscience was troubling me. The trip was for pleasure and the fun of it, and because I wished to get home, and I wanted to get home so as to save time Monday morning. For many years I have shut down on inclination whenever I felt that what I *wanted* to do was not exactly what I *ought* to do. While I ate my supper there was a warfare going on. Something urged me to go ahead and have the wheelride, no matter what people thought, or if it might not be just the thing. While I am discussing this matter I feel that my readers are divided into two great classes on this question Very likely the larger number will say, "Why, Bro. Root, you make a big fuss about little things. You had been gone away a week, and were almost home. If you rode your wheel you did not oblige anybody to work on Sunday—not even a horse. It was your own strength and muscle. If you never do any thing worse than that, you will do pretty well." Another voice (or we may say another company of my friends, and perhaps the small company) said, "Dear child, you have taught vehemently for years past, to shun, as the Bible enjoins, even the *appearance* of evil. You have, through all your Christian life, refrained from any thing that seemed like work or uncalled-for work on God's holy day. Fifteen miles before dark will be very severe exercise—it will be work. But even if it be true that this work is something you enjoy, it will be 'seeking your own pleasure' on God's holy day in a way you have not been accustomed to do. Still more," and the voice sank almost to a whisper—yes, it *was* a still small voice that suggested, "not many years ago, here in this same town, you addressed a churchful of people. The business men, you may remember, closed their stores, and came out *en masse* to hear you talk. You spoke about Sunday observance. You told them how careful you were to abstain, not only from business, but from making the day a day of pleasure and recreation. In fact, you defined pretty closely what it meant to remember the sabbath, to keep it holy. Now, perhaps many of those who listened to you will think it is all right, your going home on a wheel under the circumstances; but are there not a few who will feel pained to notice that A. I. Root, as the years go by, has lost, at least to some extent, his careful and conscientious regard for the sabbath? During the whole 15 miles, where everybody knows you more or less, will not many be pained, and perhaps some of the younger ones *harmed*, by the spectacle of yourself out on a bicycle on Sunday? You know you have been pretty severe on some of the teachers in your own Sunday-school who take bicycle-rides of several miles on Sunday afternoon for recreation, pleasure, or business."

I am ashamed to say that, for a time, I was contrary and stubborn. I was not inclined to give up; but I finally declared I would err on the safe side, and that inclination should cut no figure in my decision. A bright young girl was waiting on the supper-table. I asked her if she could tell me about the preaching services of the evening. She said there was to be a sermon at the Free-will Baptist church;

that their minister was a comparatively new man, but he was very interesting, and the church was always full. You see God, in his infinite mercy and love, had in store for me something to correct my impressions during the fore part of the day, and there I was planning to leave my coat and valise to go by express, and *I* to go flying across the country in my shirt-sleeves *in place of going to church.*

I was on hand early at that Baptist church, and got into a very bright active Endeavor society. In fact, the little church was pretty well filled with young people and those too who remember that iron-clad pledge to take part in every meeting. That little country place, not much more than a four corners, furnished a larger attendance at the Endeavor meeting than the great First Congregational Church in Toledo. After the Endeavor meeting, a real live Christian minister gave us a home talk of twenty or twenty-five minutes. He took his theme from the text of the Endeavor meeting, and he asked the young men and women if they were looking out that *mother* had an easy time when so many people are getting tired out in consequence of the heat. He gave some glimpses of home life that almost made me think he had been peeping into our own home; and by the way the young people exchanged glances I knew he had struck on a point that needs to be touched on in almost every home in the land. Look out for the dear mother, and see that too many burdens are not allowed to fall on her shoulders. In this little country town the people came out until the church was crowded almost to overflowing. The windows were opened wide, there were plenty of fans, and it was not so uncomfortable after all. If our great cities are in danger of being spoiled by wealth and every thing it can furnish in the way of conveniences for worship, thank God the little towns are holding fast to Bible teachings, and making a good use of the plain humble little churches, many of them that were built by our fathers years ago. Thank God for the country, for the small towns, and for the plain country people.

Just one more picture. Not long ago I attended a great picnic. There were *steamboat* loads of men, women, and children. I was with the crowd, although I did not much approve of the place where we were going. As the train swept past a little country town I saw another crowd of picnickers. They were loaded on an old-fashioned lumber-wagon. There was not any style about it, and the children were not dressed as expensively as many of the children on the train; but right up in the center of the group on that lumber-wagon was a little home-made banner; and on that banner was some rude printing which read, "Our Sunday-school;" and it seemed to me then that there was probably more real integrity in that little wagonload than in the whole great crowd that filled the two great steamers. Yes, I should sooner expect to find the child that may some time be worthy to become *president of the United States*, among those humble hard-working people, than among the thousands that go out from cities.

NOTES OF TRAVEL

BY A. I. ROOT.

A TRIP TO NORTHERN MICHIGAN.

My impression is that few of the friends realize how much it helps a man in business to have a printed letter-head, so that whenever he writes a letter to anybody he tells the world, or whoever may get hold of it, something about what his business is in life. As for myself, it always pleases me to see something printed on any letter I get, indicating who the writer is, or *what* he is, besides where he lives. One day my eye was caught by a printed letter-head reading as follows: "James Hilbert, Elmwood Fruit-farm. Specialties: Strawberries, maple syrup, and honey."* Well, now, all of these things interested me, and just then they interested me still more. When I was up in Muskoka having such a good time I told my friends I owned 40 acres of land in the northern part of Michigan; and by looking on the map we found it was just about as far north as Muskoka; and I remembered, too, it was called a great place for hot-weather excursions and summer resorts. My land is a few miles north of Traverse City; and this letter-head that attracted me came from the postoffice nearest to my property. Of course I soon scraped acquaintance with friend Hilbert, and talked about making him a visit. Well, one day I noticed that on the 21st of August there would be an excursion from a station near by, to Traverse City and *return*, for only $6 80 At first I thought it must be a mistake, but I soon found out it was correct. The regular fare one way would be over $10.00. When we are finding fault with the railroad companies would it not be well to remember these special privileges they give us every little while?

On very short notice I was in Traverse City, and called up friend Hilbert by telephone. While I was waiting for him to come after me I rented a wheel and got out in sight of my property. In fact, I would have ridden clear over to Mr. Hilbert's, but feared he might go to town by some other road, and so I should miss him. As a rule, the roads are sandy in this locality; but the one I found along Traverse Bay was a very fair and certainly a very pretty wheel-route.

I soon noted that this peninsula was a great place for growing potatoes. In due time friend Hilbert appeared with a smart span of ponies and a light buggy, and we were off over the sandy hills. His letter head did not say any thing about growing potatoes; but he might well have "potatoes" among his specialties, for he has about 17 acres of his own; and when we got on top of a pretty good-sized hill I could see potatoes in every direction—not only acres of them, but miles. You see this cooler climate, while it is not just the thing for corn, is just right for potatoes. They do not stand hot weather; and I believe our experiment stations tell us that what is often called blight is only the effects of extreme heat with a humid atmosphere. The foliage seems to burn or rot around the edges. I visited the same locality just nine years ago, and I did not notice then that it was given particularly to growing potatoes; but since then everybody in that region seems to have discovered that potatoes are *the* crop.

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*James Hilbert, Bingham, Leelanau Co., Mich.

Another pleasant surprise awaited me. It is a great *buckwheat* country. Buckwheat, like potatoes, does not stand much heat—at least the grain does not fill well until we begin to have cool nights. Friend Hilbert had a large field of his own, and ever so many more were in sight over the hills in different directions. He says they grow only the common old-fashioned buckwheat. Honey was coming in right lively. Combs were being filled out and capped, and the inside of his hives looked like June in clover time. I told him the honey looked too light-colored to be buckwheat; but when I tasted it I found it had the buckwheat twang all right; but I did think it was a little the *nicest* buckwheat honey I ever tasted. I told Ernest about it, and he said it was, without question, buckwheat and red-clover honey mixed. The Traverse region is also a fine place for growing red clover. Again and again I wished friend Terry could take a look over Leelanau County. I was astonished to learn that they sow red clover in August, among the growing corn or wherever there is a chance to get it in. Said I:

"Why, look here, Mr. Hilbert; how is it possible for red clover to winter over away up here in the North when sown in August, when it would not in Ohio?"

"Why, Mr. Root, you fail to take into account that we have snow here oftentimes in November that stays on the ground till April."

Somebody has told me since that clover *grows* under the snow all winter, for the ground is rarely frozen at all. Friend Hilbert pointed to the fences around the barnyard and laughingly remarked that he had many times driven his team right over the tops of those fences on the packed-down snow.

Perhaps I had better warn our readers right here that this Traverse region is just now my hobby, and you will have to make due allowance; and, to tell the truth, I can not think of any other place in the whole world, that I know of, where I should like so well to grow strawberries, clover, and potatoes, as in this region.

Friend Hilbert has a family of seven. I do not know but I have told you before, a fruit-grower needs a lot of boys and girls if *anybody* does. Well, he has a very nice place away up on the summit of a hill, and a *very* nice family. I soon became acquainted with them all, and even went out into the outside kitchen to find the tea-kettle and help myself to hot water. I had been down in the strawberry-patch admiring the rank luxuriant growth of his plants, and pulled weeds to see how much easier they came out in that sandy loam than in our own Medina clay soil; yes, and I sampled the blackberries till I came pretty near getting sick. Why, there was no *end* of things around friend Hilbert's that aroused my enthusiasm. For instance, his little girl, eight or nine years old, went out by the barn to dig potatoes. I thought, as she went along with a light potato-hook in her hands, she was hardly large enough for such work. In fact, the potato-hook would not have been large enough nor *stout* enough either, in our Medina clay. I saw her dig one hill, and looked on with astonishment, not only at the beautiful large potatoes, but at the number in the hill. The hills were rather scattering there, however. I do not know but the hens scratched some of them out. I took the hook and picked out a sample hill where there was a good stand, say three feet apart in the rows, and fifteen or eighteen inches between the plants. Friend Hilbert is up to the times, and cuts his potatoes to one eye, or perhaps two. In that whole region they practice level culture. I took just one hill for a sample, and to my great joy and surprise I found 13 great whopping Early Rose potatoes, beautiful in shape because the soil is so soft, fine, and yielding that the potato could develop exactly as it does under the straw in our orchard. Thirteen clean smooth large handsome potatoes, and more hills all around just like it. I marched into the house and back into the kitchen where I found friend Hilbert, and commenced:

"Mr. Hilbert, what did you put on that potato ground out by the barn where these grew?"

"I did not put on any thing — no manure nor fertilizer of any kind."

"What crop did you have on last year?"

"Let me see—I think it was corn."

"Well, what did you have on the year *before* that?"

"The year before, I had a nice crop of strawberries there, and the ground was well manured for them. It gave us a nice crop of corn, and now you see it is giving us some very fine potatoes."

"Very *fine?* I should say so;" and I held up my thirteen potatoes. "Why, that crop will make 400 bushels to the acre where I dug these."

While the women were cooking the potatoes I wanted to raise the lid of the kettle once in a while and see how they were turning out. I often do this at home, but I did not dare to take the liberty there; but when they were put on the dinner-table, weren't they fine? Well, I had not ridden a wheel before dinner, but we had been out fishing, and we had had *wonderful* success. Let me see. Friend Hilbert might say on his letter-head, after he tells about the strawberries, maple syrup and honey, "Potatoes, fish, and blackberries"—well, I guess I will not tell the rest; but those Early Rose potatoes, with the fish we caught in Traverse Bay, and some maple syrup as a kind of side issue—well, now, I tell you, were they not fine? Yes, and friend Hilbert away off there in the country has an *ice-house*, and a bright smart little girl whom they call "Erna" (how I did start and look around when somebody called out, "Erna"!) who makes the nicest ice-cream you ever thought or heard of.

Were it not that this is in the department of High-pressure Gardening I might tell you something about the fish ; but I will say this much, anyhow : The result of our fishing was between 50 and 75 pounds of white fish.

The day I came away Mrs. Hilbert took charge of about a dozen girls and women picking blackberries. While the women-folks were picking the berries a seventeen-year-old son, with another boy to help him, went out to take in the gill-nets ; and in the afternoon friend Hilbert, with his smart ponies, was to take a load of fish and blackberries to Traverse City. Now, here is *another* object-lesson from that Elmwood fruit-farm. Every load of stuff he takes out is *sold* before he starts. His ponies run it right into the city double quick. He unloads and goes right back home to attend to business. This is accomplished by means of his telephone. I was a little surprised to see a telephone-wire running away off something like ten miles into the country. With this telephone he informs them in town what he has got, and they all know by past experience what kind of stuff he brings to market, and then they make their offers. If any grocer or fruit dealer has a call for something, he just phones friend Hilbert, and out it comes. That telephone saves him dollars (I might almost say, every day) in *time.*

Friend Hilbert, like most other bee-keepers, is a genius. He has an evaporator of his own invention for making maple syrup ; and judging from the syrup I should call it a big invention. He has not any on hand now, for every one of his 540 gallons was sold as soon as made, and he has lots of orders for more.

Now, don't all of you get an idea that either friend Hilbert or myself have some land to dispose of in the Traverse Peninsula. It is the man as well as the locality. When I first entered the home I saw the *Rural New-Yorker* spread out on a stand in the sitting-room. Later I asked him how many people in that vicinity took the *Rural.* He said he did not know of any who took it. The publishers had asked him to try to get up a club there, but his neighbors said they could not afford it ; and if you would look at a potato-field almost adjoining his own you would be led to think *perhaps* they could not afford a dollar for an agricultural paper. Many people would call the peninsula a poor place to grow potatoes.

Of course, there are advantages in the way of a cooler climate than we have here in Ohio, in a soft mellow loam—that is, in the hardwood land where there is enough clay to make the sandy land productive. Mr. Hilbert has got his land acre by acre into a high state of fertility by carefully saving all his manure and turning under clover. I believe the locality is not favorable for cattle or sheep ; therefore they do not secure the amount of manure here in grazing that they do in the butter and cheese localities of Ohio and adjoining States. Mr. H. says it is a fact that their soft loamy soil does not hold manure as it does here in Ohio, and that humus must be furnished by turning under clover or other green crops. There are people in the vicinity (I came pretty near saying *farmers*) who undertake to raise potatoes on the same ground year after year without clover or manure of any kind, and it is just depressing to look over such places. But this is true more or less almost everywhere. I felt attracted to the locality because of the cool climate, the loose soil that seldom if ever needs undraining, and its particular adaptability for potatoes, strawberries, buckwheat, and clover when managed intelligently.

MORE ABOUT THE SUMMER OUTING IN THE MUSKOKA REGION.

In view of the general interest in regard to this article, especially during the past season, I have asked Mr. Grainger to write up their trip from the point where I left off. We can give him credit for one thing—he gives a truthful and honest statement of the discomforts as well as the enjoyable things of the Muskoka lakes and islands. In the write-ups we generally get, there is not much said about mosquitoes, especially where the object is to get people to patronize the boats and railroads.

We had received the hearty handshake, and the fervent "God bless you, boys," and our pleasant outing with A. I. Root in the backwoods of Muskoka was a thing of the past. It did seem too bad that he should have to leave us just when he appeared to be receiving some benefit from the trip, for we had noticed of late he had been doing ample justice to the large quantities of porridge, plates of fish, beans, potatoes, coffee, etc. A story might be told of some black bass and coffee which mysteriously disappeared after some one had said, "Not any more for me, thank you."

As we paddled away from the wharf we played, as a parting message on our cornet, "The Sweet By and By" and "Lead Thou me on ;" and as the last notes died away, the strain was taken up by voices across the lake, and quite distinctly we heard the words as we paddled back to camp.

We had hoped to use the sail but the wind shifted around and blew a gale from the opposite direction, so we had head wind all the way. We were a little anxious about a fire we had left burning in the morning, but were very much pleased on reaching our camp late in the evening, tired, hot, and thirsty, to find every thing all right. We were not long in getting into the water for a bath, which refreshed us greatly ; then followed a good supper of fried fish, potatoes, beans toast, and berries. After sundown the wind dropped, and the river was like a sheet of glass. The night was too warm to light a fire ; and as the mosquitoes were troublesome we decided to spend the evening on the river. Accordingly we made ourselves comfortable in the canoe, and, paddling out into the middle of the stream, permitted ourselves to drift with the current while we listened to the echo of our favorite hymns played on the cornet. The air was so fresh, and the moonlight so beautiful, that it seemed too bad to miss any of it ; but at 11 P. M., in spite of the inspiring surroundings, we retired to our tent. We felt just a little lonely at first without our companion of the past week ; but that feeling did not last long, for who that really loves nature could be lonely here? Our island is almost surrounded with marsh. We have an aquatic garden, with an endless number of plants, not to mention animals, of which we have a great variety. We call it the farmyard, on account of the wild ducks being so numerous. They are getting quite tame, and often come quite close to our tent. While we were at breakfast this morning (Monday) a crane was walking about in our duck-pond, with his characteristic stride, looking for his early morning meal. Very often the "quack, quack," of the ducks is relieved by the coarse gruff croaking of immense Muskoka frogs, noted for the excellent qualities of their hind quarters, nicely browned in the frying-pan, with butter, etc.

Later in the evening we heard the welcome and rather musical notes of the whippoorwill. When at last we are just about to draw the curtain, and close the tent for the night, a last look out to see if our fire is all right generally reveals five or six bats making their apparently aimless flight. Of land animals we have a goodly number. At the back of our island there is what is called a deer-lick, and the tracks to and from this hole are quite plainly seen. Chipmunks and red squirrels come right up to our table to get the crumbs. Of snakes we have three distinct varieties, all non-poisonous and quite tame. We do not molest them, and have become quite accustomed to seeing them around—in fact, rather like to watch them. We have some large-sized lizards, and a big mud-turtle. Now, who could be lonely with such company?

Tommy was very sleepy this morning. I could scarcely get him up, and he seemed half dazed for a time. He had his shirt on wrong way about. He was puzzling to know how he buttoned it up the back—said he could not remember doing it. I suggested he put his vest on that way too. He said he would not do that, for he might get lost in the bush. I asked him what difference that would make. He said, "Why, I wouldn't know which way I was going; I should get all turned around." By the way, there is some Irish about Tommy.

We went out to explore Morrison Lake, and, if possible, gather berries. The day was very hot, and the deer-flies were so bad in the bush that we were forced to retreat without the berries. We went to see Mr. Armstrong, a settler on the lake, from whom we got a fresh supply of butter and a great deal of information. He told us we could get into Morrison Lake from the railway, by road, only six miles distant, and good enough for a bicycle. We also found that we could portage from Morrison Lake into several other lakes where there is splendid fishing. We decided, as there seemed to be so many advantages in this part of the country, to purchase a place here if possible, and make it our headquarters. We spent the evening with a party of campers from Orillia; had a very pleasant time on the river in the moonlight, as usual, with the cornet for company. The moonlight nights here are magnificent, as it is so quiet and restful. Outside of the occasional call of the whippoorwill, and the music of the rapids in the distance, there is perfect quiet. The least noise can be heard a remarkably long distance. The notes of the cornet echo from rock to rock, five or six times. Each time it seems further and further away, till at last it dies away entirely in the distance. The effect is very beautiful, and, together with the hazy, shadowy appearance of the river-banks reflected in the moonlight, gives it all a strange and weird though very charming effect that lives long in the memory, and is not the least of the many pleasant effects peculiar to this most desirable summer resort.

To-day (Tuesday) the wind got up about 7 o'clock as usual. After a good breakfast we started out to explore the islands in Morrison Lake. We put our fishing-tackle in the canoe, also a lunch (quite a bulky parcel, by the way) considering there were only two in the party. We also took along our largest tin pail so that we could have some hot coffee. Our way was up the Morrison River, over two portages. I wish I could describe Morrison River. It is a narrow stream, very winding; the banks are lined with green trees, ferns, and wild flowers. Every turn in the river presents a new scene of verdant beauty. Aquatic plants find a congenial home here. In fact, one has almost to push the boat though beds of purple willow-herb (the celebrated honey-plant), pretty pink marsh-nettle (*Stachys palustris*), flowering fern, arrowhead, and thousands upon thousands of sweet-scented water-lilies (*Nymphea odorata*). There are also yellow water-lilies in great abundance, and deer-grass with its pretty pink blossoms. From Morrison River we made our way into the clear waters of Morrison Lake. Here we threw out our trawling-line; and as the wind was favorable we put up our sail. This was very pleasant, and we were getting along nicely when we discovered we were driving straight on to some rocks that were partially hidden. Tommy tried to draw in the trawl and guide the boat at the same time, while I tried to get down the sail and keep the boat off the rocks with my paddle. My paddle dropped overboard, and in the midst of the excitement Tommy announced the fact that the trawl was caught on a rock. First we secured the paddle, got the sail tucked away, and were drawing in the line when we discovered that, instead of having a rock on the end of the hook, we had a beautiful fish. When landed it proved to be the largest fish taken to date. After that we made for the island, ate our lunch, and then prepared to investigate. We were paddling slowly around the north side of Island B, and we noticed that the bushes appeared to have a bluish cast. We soon landed, and were delighted to find the rocks just covered with blueberries. We did have a feast. After we had eaten all we wanted we filled our largest tin pail with them. Further on toward the center of the island we discovered a beautiful patch of red raspberries; but as we had nothing to put them into we had to leave them. The island is beautifully wooded, and so nicely situated, a short distance from the main land, with nice sandy beach suitable for bathing, and very desirable in many respects, we decided there and then, if possible, to purchase it.

It was now getting dark, and we started down the river for camp, which did not prove nearly so charming in the moonlight as we had expected. The mosquitoes were simply dreadful. We had almost to fight our way through. The noise they made was like bees swarming. We managed to cover our heads with our handkerchiefs, but they went for our hands so bad that we could scarcely paddle. We got through at last, minus the blood we left behind, and prepared to get supper. We were much disappointed to find the mosquitoes around our camp in great numbers, apparently waiting for what was left of us. We found it necessary to build a large fire, which drove them off; then we ate a good hearty supper in peace. During the day we did not notice any mosquitoes at all, but have learned by experience that it is not wise to explore marshy places after sundown.

Wednesday.—It was very windy to-day; rested all morning; saw no boats passing our camp. The wind was so high that no one cared to venture out; went for a long walk in the woods, picking flowers, eating berries, and amusing ourselves generally. Went fishing in the evening. Tried fishing by moonlight for the first time. Caught one pickerel and several very large catfish. One was so large it broke my pole as I was landing it.

While fishing we were surprised to see a man with a heavily laden canoe coming right down through the rapids. Evidently this was a common thing for him to do. He just looked up, said "Good evening, gentlemen," and was gone. We decided if *he* could go through so nicely we would try it too, when we made our trip down the river to see the electric works. It may be that the scraps we threw away after mealtimes, or the situation is most favorable, but certainly this place seems to be the favorite haunt of all kinds of animals and insects. They are *very* friendly, and have a rather free and easy style about them which is rather embarrassing at times. They have a way of dropping around, not only at mealtime, but also at bedtime. Besides six distinct kinds of flies, all of which are much more active and industrious than the common house-fly, we have large black ants, wasps, hornets, and beetles. Then the snakes seem to be more numerous, and we have become quite interested in watching their habits. But then there is a limit to one's enthusiasm along that line, for, no matter how much one may be interested in natural history, he naturally objects to having the subject for a bedfellow. Last night, when we returned from our fishing-expedition in the moonlight, we found a large-sized snake trying to make his way into our tent. So far we had not molested the snakes; but we felt the line would have to be drawn somewhere, for the thought of having even harmless snakes, between three and four feet long, crawling over one while asleep is not calculated to produce pleasant dreams. We chased that fellow and tried to kill him, but he got away. The first thing in the morning, however, when I opened the tent I discovered him back again at the same place. This time he was promptly despatched. As I write, a small every-day ordinary little toad has hopped up on the rock beside me; and as he looked so home-like and familiar I decided to let him stay and watch him catch flies, and hope with all my heart that he will catch them all.

Thursday.—To-day we decided we would pay a visit to the Ragged Rapids, where the citizens of Orillia are investing $75,000 in an electric plant to supply their town with light and power. We set out after breakfast, taking our lunch and fishing-tackle as usual. To get there we must either shoot the rapids or carry our boat over a long portage. We had heard that the dam was almost complete, and we could see that the water was rising, even up where we were camped, as the little wharf we made to land our boat was now covered with water. As we approached the rapids between our camp and the works, we debated whether to shoot the rapids or carry the canoe over the portage. I said I did not think it was right for me, with a wife and three little children, to run any risks; but then the weather was *so hot* I just hated to carry that canoe over that rough, rocky path, so we decided to have a look, and, if thought safe, would go down. After a little consideration we decided to risk it. Accordingly we headed our canoe right for the center of the stream, and in two seconds were in the center of the rapids, paddling for all we were worth, and going at a terrific speed. It is a very peculiar and rather pleasant feeling, just as one enters the quick water. The canoe seems fairly to leap through the water. It is just dangerous enough to make it exciting. The great point is to avoid sunken rocks, where the jagged edges come nearly to the surface; also to keep the canoe from getting sidewise. I do not know of any thing that is as much like it as tobogganing down a steep hill. My! how we wished our friend A. I. could have enjoyed that little trip through the boiling surging waters. As we got through safely, we were, of course, glad we had not carried our canoe over the rocks. A paddle of about an hour brought us to the works, which we found much more extensive than we had expected. The ragged rapids are much more picturesque than Nos. 1 and 2. The banks of the river at this point are very high and steep, and a great deal of hard work was done before the dam was made and the water brought under control. The arrangements for conducting the water to the wheels that drive the dynamo are very similar to those on the Canadian side of the river at Niagara. We found a great many excursionists down there, among them a party of about twenty Americans. We noticed some of them wore the uniform of the United States army. There were also several ladies who appeared to be very much interested in watching the men on the opposite side of the river making preparations for blasting the rock. After a good look at the works we decided to go back to rapids No. 2, have our lunch, and try for some fish. There was a strong west wind blowing, and with the help of the sail we were soon back to our favorite fishing ground. Tommy gave me both lines to look after while he made a fire and some coffee. The water in the river was so warm we did not seem able to get enough of it to quench our thirst, and we were looking forward with a great deal of pleasure to having our lunch under the shade of a tree, with a big can of coffee, which was now just about ready. I suggested that Tommy put the can partly in the water to cool it quicker. That proved to be a very unfortunate suggestion. I saw Tommy start for the river-bank, with the steaming coffee in his hand. The next time I looked he was gazing at the empty can. I said, "What's the matter?" He said nothing, looked at the pail, then looked at me. I said, "Well, what are you going to do about it?" but he just looked at the pail, and looked at me. I don't know that I ever wanted coffee as badly as I did then; and to see all that beautiful coffee dumped in the river was tantalizing in the extreme. Tommy, in going to the river, slipped, dropped the coffee—that was all.

Friday.—To-day ended our holiday. From this time on it was *work.* We had six large sacks to fill with sphagnum moss, so we got our breakfast over early and prepared for work. With our sail set, and a good wind, we were soon skipping over the water toward the sphagnum swamp. After a little searching we found the patch, and got a fine lot gathered and carried out on to the rocks. It was hard work, and hot, and by night we were just about played out; and, oh my! so thirsty, for we could not drink the water in the swamp. To get back to camp we had to go through or past rapids No. 1, which are considered more dangerous than No. 2. It was late, we were tired, and we knew that others had shot these rapids lately, so we decided to try it. We let the boat partly down, however, with rope, and threw in our lines for some fish. After catching a few we got into the canoe and started down the rapids. We went pretty lively for a time; and just as I had decided we were out of danger, and had stopped paddling, a sudden undercurrent caught the front of the canoe and gave it a terrible jerk sidewise, nearly shooting me out over the front, and all but upsetting us into the river. We got through all right, however, and felt very thankful indeed that we had not been spilled into the rapids. So far as I know, the two boys from Buffalo and ourselves are the only parties who have shot rapids No. 1, this season.

Saturday morning.—Up at 4:30 A. M. packing up preparing to move our camp. In some respects we were not sorry to leave, for our neighbors, the wasps, snakes, beetles, etc., were becoming almost too familiar, and we were forced to come to the conclusion that even this paradise was not exactly perfect, any more than was Adam's; for, although he had Eve coaxing him to eat forbidden fruit, he probably did not have flies, wasps, and mosquitoes, in such large numbers to bother him. We were commencing to think that it would be very nice if we could have two of Eve's daughters, whom we might mention, along, with all their faults ("sour apples" and all), if only to have one decent meal, cooked *right,* and *ready* for us when we came home tired after work. After all, it is *not* good for man to live alone—that is, not for very long.

We stitched up our sacks of sphagnum, ready for shipment, and paddled away down the lake to the steamer's wharf, but could not induce the captain to go down the river for our moss. By this time the wind had risen and the lake was very rough. We had all our things in the canoe, a rather heavy load, and it was all we could do to make Monahan's Point, on the river, where we decided to camp for the night. We were so tired when we reached the shore that we just piled our things on the bank of the river, got our blankets, laid down under the shade of a large maple-tree, and were soon fast asleep. After some time had passed I awoke to find that the weather had changed. It had turned cooler, and a thunderstorm was coming across the lake. I aroused Tommy, and we started in a great hurry to put up our tent; but before we could get it up the storm struck us. The wind was terrific, and the rain fairly poured down. We got our tent partly fixed, when a sudden squall struck it, and down it came with a crash. By this time we were soaking wet. I happened to think of my blanket, and covered that up, so that I could have a dry bed. We got the tent up at last; put our things under shelter, then proceeded to make a fire, stretch a rope around it, and hang up our wet things to dry. For a time it looked very much like washing-day; but in a little while, with the aid of the wind and the fire, our things were dry. There were three other camps, near ours, and we soon made the acquaintance of our neighbors, who proved to be very friendly, and helped us very much. There were four ladies in the party, and very agreeable company they proved to be too.

We were up bright and early in the morning, and took a look around the point. This is a very beautiful place, and a favorite spot with campers. There are no mosquitoes, wasps, snakes, or other troublesome companions here. The only objection to this place is that it is too far away from the good fishing grounds. I noticed a change come over Tommy when he found there were ladies in the neighboring tents. He commenced at once to "slick up," first by shaving and then putting on his clean clothes, and fixing things up generally. After a long searching scrutiny of himself in the glass, or, rather, as much of his face as he could see in the small one we had with us he grabbed a pail, and said he was going to the farmer's to see if he could get some milk. I noticed, however, the sudden move was made just after one of the young ladies from camp No. 4 started with a pail on a similar errand. Strange to say, they returned together, chatting like old acquaintances. By this time all the campers had become well acquainted, and commenced exchanging notes, etc. We told the ladies our difficulties with the pancakes, for, try as we would, we could not get them right. When they were burnt on the outside they were dough in the middle. They very kindly offered to help us out, under one condition—namely, that we make enough pancakes for the entire party, and come and dine with them. Of course, we consented, and the pancakes were started. They proved a real success. We had a most enjoyable time together. Camp No. 2 had two lady visitors from Orillia, relatives of the Postmaster General. They brought with them several little delicacies—cake, watermelon, etc., which were very much appreciated. We spent a very enjoyable evening, with music and stories around the campfire, until a late hour, then retired.

We were up bright and early in the morning, and after a hard paddle succeeded in getting our six bales of sphagnum to the wharf; then a brief and reluctant farewell, a hurried packing up, and we were off down the river to the railway station. Late in the evening we landed in busy bustling Toronto again.

Toronto, Aug. 23. E. GRAINGER.

EXPERIMENT-STATION WORK.

The above is the title of Farmer's Bulletin No. 119, from the Department of Agriculture. It treats of storing apples without ice; cold storage on the farm; mechanical cold storage for fruit; keeping qualities of apples; improvement of blueberries; transplanting muskmelons; banana flour; purslane, etc. It will be sent free on application to the Secretary of Agriculture, Washington. I was particularly interested in the article on purslane (or "pusley"), first, because it can be used for food; and, secondly, that it is valuable to plow under. Our early potatoes were all planted together in order that they might give us the ground for something else all in one piece. The first to ripen were the Triumphs. I do not think they ripened, however. They blighted on account of the excessive heat; but just as soon as the ground was clear, pusley came up and grew wonderfully. Before I knew it, one could hardly tell where the potato-rows were. But the other kinds that covered the ground with green foliage kept the pusley down. However, it kept coming as fast as the potato-vines died. Now, I do not like to dig potatoes during hot weather in August—that is, where they are to be kept over for seed; neither do I like to have my ground seeded so tremendously with pusley; therefore I told our people we would have to dig the potatoes and put them in the cellar. The Dowden digger, somewhat to my surprise, laid the potatoes on the ground all right in spite of the loads of pusley that were on top. In some places a boy had to walk ahead of the digger to show the man where to drive. In picking the potatoes up we had to kick the great clumps of vines to one side. As soon as the potatoes were all dug we turned the pusley under, and we are going to keep the ground harrowed every few days until time to sow the wheat. It is so early I was almost inclined to try sowing Canada peas with buckwheat and crimson clover, letting the clover come up through the peas and buckwheat after the frost has killed them down. I am almost afraid, however, to risk crimson clover any more in September, even if protected by buckwheat or something of that sort; and I certainly want my ground covered with *something* green all winter—every foot of it

BELGIAN HARES.

By scanning our agricultural press I find the reports are very conflicting in regard to Belgian hares; but the general impression is certainly not in favor of the fancy prices at which they are at present held. And may I suggest another very important fact that people seem to lose sight of? Granting that their meat is equal to chicken, and that they can be raised as cheaply, pound for pound, please do not forget, friends, that Belgian hares *do not lay eggs*. Possibly we could afford to raise chickens, even if they were all roosters, simply for broilers; but I tell you there is no other industry in the whole wide world that furnishes wholesome food at so small a price as the egg industry. The great bulk of the eggs in market come from fowls that roam at large. There are many reasons why Belgian hares can never roam at large as chickens do.

ARE THEY AS GOOD AS CHICKENS?

From an article on the subject in the *Rural New-Yorker* we extract the following:

> We kill and eat them at any time of year, just as we do chickens or any other farm stock, and we have never kept any thing that has given less trouble and more profit. . . . The meat is very much better than that of wild rabbits, and many consider it better than chicken.

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Edw. L. Bump, Delavan, N. Y.	50

Books for Bee-keepers and Others.

Any of these books on which postage is not given will be forwarded by mail, postpaid on receipt of price.

In buying books, as every thing else, we are liable to disappointment if we make a purchase without seeing the article. Admitting that the book-seller could read all the books he offers, as he has them for sale, it were hardly to be expected he would be the one to mention all the faults, as well as good things about a book. We very much desire that those who favor us with their patronage shall not be disappointed and therefore we are going to try to prevent it by mentioning all the faults, so far as we can, that the purchaser may know what he is getting. In the following list, books that we approve we have marked with a *; those we especially approve, **; those that are not up to times, †; books that contain but little matter for the price, large type, and much space between the lines, ‡; foreign, §. The bee-books are all good.

As many of the bee-books are sent with other goods by freight or express, incurring no postage, we give prices separately. You will notice that you can judge of the size of the books very well by the amount required for postage on each.

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10	Same, words and music, board covers	75
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4	Stepping Heavenward**	18
5	Tobacco Manual**	45

This is a nice book that will be sure to be read, if left around where the boys get hold of it, and any boy who reads it will be pretty safe from the tobacco habit.

BOOKS ESPECIALLY FOR BEE-KEEPERS.

20	A B C of Bee Culture, cloth	1 00
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3	Amateur Bee-keeper, by J. W. Rouse	22
14	Bees and Bee-keeping, by Frank Cheshire, England, Vol. I., §	2 36
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	Same, Vols. I. and II., postpaid	5 25
10	Bees and Honey, by T. G. Newman	65
10	Cook's Manual, cloth	1 15
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3	Foul Brood; Its Natural History and Rational Treatment	22
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15	Quinby's New Bee-keeping	90
	British Bee-keeper's Guide-book, by Thomas William Cowan, England §	40
	The Honey-bee, by Thos William Cowan	95
3	Merrybanks and His Neighbor, by A. I. Root	15
	Bienenzucht und Honiggewinnung	50

Or "Bee Culture andthe Securing of Honey," a German bee-book by J. F. Eggers, of Grand Island, Neb. Postage free.

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Probably the leading book of the world on strawqerries.

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This is T. B. Terry's first and most masterly work.

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2 | Celery for Profit, by T. Greiner** 25

The first really full and complete book on celery culture, at a moderate price, that we have had. It is full of pictures, and the whole thing is made so plain that a schoolboy ought to be able to grow paying crops at once without any assistance except from the book.

15 | Draining for Profit and Health, Warring.........1 35

10 | Fuller's Grape Culturist **................................1 15

8 | Domestic Economy, by I. H. Mayer, M. D.** ... 30

This book ought to save at least the money it costs, each year, in every household. It was written by a doctor, and one who has made the matter of domestic economy a life study. The regular price of the book is $1.00, but by taking a large lot of them we are enabled to make the price only 30 cents.

10 | Farming for Boys*...1 15

This is one of Joseph Harris' happiest productions, and it seems to me that it ought to make farm-life fascinating to any boy who has any sort of taste for gardening.

| Farming with Green Manures, postpaid**........ 90

7 | Farm, Gardening, and Seed-growing** 90

12 | Gardening for Pleasure, Henderson*.................1 35

12 | Gardening for Profit**.......................................1 35

8 | Gardening for Young and Old, Harris**...........1 25

This is Joseph Harris' best and happiest effort. Although it goes over the same ground occupied by Peter Henderson, it particularly emphasizes thorough cultivation of the soil in preparing your ground; and this matter of adapting it to young people as well as old is brought out in a most happy vein. If your children have any sort of fancy for gardening it will pay you to make them a present of this book. It has 187 pages and 46 engravings.

3 | Ginseng Culture, by Morris G. Cains............... 25

3 | Grasses and Clovers, with Notes on Forage Plants 20

This is by Henry A. Dreer, author of the book, "Vegetables Under Glass" that has had such a large sale of late. This little book tells how six tons of grass has been grown to the acre, and gives much other valuable matter.

10 | Greenhouse construction, by Prof, Taft**.........1 15

This book is of recent publication, and is as full and complete in regard to the building of all glass structures as is the next book in regard to their management. Any one who builds even a small structure for plant-growing under glass will save the value of the book by reading it carefully.

12 | Greenhouse Management, by Prof. Taft**........1 15

The book is a companion to Greenhouse Construction. It is clear up to the times, contains 400 pages and a great lot of beautiful half-tone engravings. A large part of it is devoted to growing vegetables under glass, especially Grand Rapids lettuce, as well as fruits and flowers. The publisher's price is $1.50; but as we bought quite a lot of them we can make a special price as above.

5 | Garden and Farm Topics, Henderson**............ 60

5 | Gregory on Cabbages, paper* 20

5 | Gregory on Squashes, paper*............................ 20

5 | Gregory on Onions, paper*................................ 20

The above three books, by our friend Gregory, are all valuable. The book on squashes especially is good reading for almost anybody, whether they raise squashes or not. It strikes at the very foundation of success in almost any kind of business.

| Handbook for Lumbermen.................................. 05

5 | Home Pork-making; 125 pages, illustrated...... 40

I think it will pay well for everybody who keeps a pig to have this book. It tells all about the care of the pig, with lots of pictures describing cheap pens, appliances, all about butchering, the latest and most approved short cuts; all about making the pickle, barreling the meat, fixing a smoke-house (from the cheapest barrel up to the most approved arrangement); all about pig-troughs; how to keep them clean with little labor; recipes for cooking pork in every imaginable way, etc. Publisher's price is 50 cents, ours as above.

10 | Household Conveniences....................................1 40

15 | How to Make the Garden Pay**.........................1 35

2 | How to Propagate and Grow Fruit, Green*...... 15

2 | Injurious Insects, Cook...................................... 10

10 | Irrigation for the Farm, Garden, and Orchard* 1 10

By Stewart. This book, so far as I am informed, is almost the only work on this matter that is attracting so much interest, especially recently. Using water from springs, brooks, or windmills to take the place of rain, during our great drouths, is the great problem before us at the present day. The book has 274 pages and 142 cuts.

3 | Maple Sugar and the Sugar-bush**.................. 32

4 | Peabody's Webster's Dictionary......................... 10

Over 30,000 words and 250 illustrations.

5 | Manures; How to Make and How to Use Them; in paper covers.. 30

6 | The same in cloth covers.................................. 65

| Nut Culturist, postpaid.......................................1 50

3 | Onions for Profit**... 40

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10 | Profits in Poultry.* 75

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10 | Small-Fruit Culturist, Fuller 1 10

2 | Sorghum, Stock Beets, Strawberries, and Cement Floors. By Waldo F. Brown................ 08

10 | Talks on Manures* 1 35

7 | Ten Acres Enough** 75

10 | The New Agriculture; or, the Waters Led Captive (a $1.50 book) 40

11 | The New Egg-Farm, Stoddard**........................ 70

This is an enlarged edition of the 50-cent book published 25 or 30 years ago by H. H. Stoddard. If I could have only one poultry-book it would be the New Egg-farm. This book is of special value to me because it not only discusses most emphatically the value of *exercise* to poultry, but it touches on the value of exercise to all other animated nature including humanity. The book has over 300 pages and 150 illustrations. It is entirely different from any other poultry-book in the world, inasmuch as it discusses mechanical contrivances so that all the varied operations of a poultry-farm may be done as much as possible with the aid of machinery. The regular price is $1 00, but by buying a quantity we are able to furnish it at price given.

2 | Treatise on the Horse and his Diseases........ 10

5 | Tile Drainage, by W. I. Chamberlain........... 35

Fully illustrated, containing every thing of importance clear up to the present date.

The single chapter on digging ditches, with the illustrations given by Prof. Chamberlain, should alone make the book worth what it costs, to every one who has occasion to lay ten rods or more of tile. There is as much science in digging as in doing almost any thing else; and by following the plan directed in the book, one man will often do as much as two men without this knowledge.

5 | Tomato Culture 35

In three parts. Part first.—By J. W. Day, of Crystal Springs, Miss., treats of tomato culture in the South, with some remarks by A. I. Root, adapting it to the North. Part second.—By D. Cummins, of Conneaut., O., treats of tomato culture especially for canning-factories Part third —By A. I. Root, treats of plant-growing for market, and high-pressure gardening in general.

3 | Vegetables under Glass, by H. A. Dreer**...... 20

3 | Vegetables in the Open Air*............................ 20

This is a sort of companion book to the one above. Both books are most fully illustrated, and are exceedingly valuable, especially at the very low price at which they are sold. The author, H. A. Dreer, has a greenhouse of his own that covers one solid acre, and he is pretty well conversant with all the arrangements and plans for protecting stuff from the weather, and afterward handling to the best advantage when the weather will permit out of doors.

3 | Winter Care of Horses and Cattle.... 25

This is friend Terry's second book in regard to farm matters; but it is so intimately connected with his potato-book that it reads almost like a sequel to it. If you have only a horse or a cow, I think it will pay you to invest in a book. It has 44 pages and 4 cuts.

3 | Wood's Common Objects of the Microscope**.. 47

8 | What to Do and How to be Happy While doing It, by A. I. Root 42

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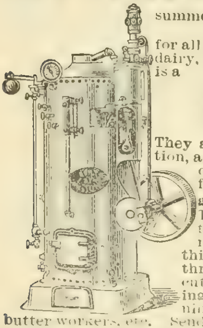

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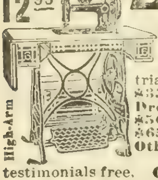

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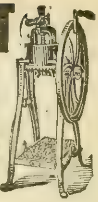

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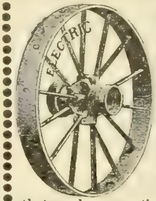

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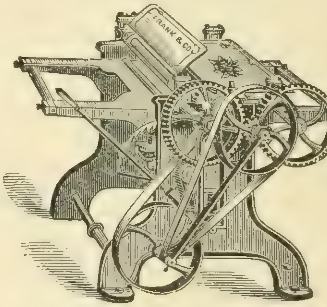

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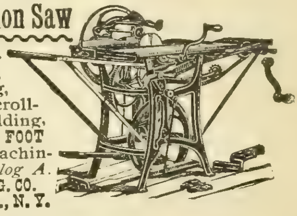

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now carrying loads and loads of pollen and sweets from the flowers to raise the thousands of new bees for the coming honey crops. We are busy with the orders for Hives, Sections, Foundation, Comb to enable the bees to spread themselves over a surface for rapid work.

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ADDRESS

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Hives Full of Honey

such a poor year as this speaks, well for stock. We are breeding queens from such colonies, from queens with records *this year* and others. Untested queens, 50 cts each; after Sept. 1, 35 cts. each. Tested queens, $1.00 each; after Sept. 1, 75 cts. each. IT WILL PAY YOU TO REQUEEN YOUR APIARIES AT THESE PRICES. Queens exchanged.

S. P. CULLEY, Higginsville, Mo.

Best on Earth! A queen I had from you lived 3 yrs., and was the best queen I ever had, and did not swarm.—E. W. Brown, Morton Park, Ill., July 30, 1900.

Three select breeding queens, $2 75.

Henry Alley, Wenham Mass.

REMOVED!

EARLY QUEENS. W. H. Laws has removed his entire queen-rearing apiaries to Round Rock, Texas, where he will be better fitted than ever to fill orders for the LAWS strain of FAULTLESS 5-BANDED bees the coming season. BREEDING QUEENS always on hand. Price $2 50 each. I am also breeding the leather-colored stock from imported mothers. Tested queens, either strain, $1 00. 6 for $5.00; untested, 75c; 6 for $4.00. Queens ready in season.

W. H. LAWS, Round Rock, Texas.

PEKING HAS FALLEN! So have the prices on our warranted superior Italian honey queens. Warranted, each, 50c; half dozen $2 75; tested, 75c; half dozen, $4 00. All queens by return mail and warranted in every respect

LEININGER BROS., Ft. Jennings, Ohio.

Italian Queens, the balance of the season, 50c; full colonies, $3 50.

MRS. A. A. SIMPSON, Swarts, Pa.

It will soon be time to unite nuclei for winter, so hurry in your orders if you would like to try Quirin's improved strain of

Golden Italian Queens.

Our largest orders come from old customers, which proves that our queens give satisfaction. We have 12 years' experience breeding queens; no bee-disease in our locality; queens are sent promptly by return mail, with safe delivery guaranteed.

PRICE OF QUEENS AFTER JULY 1:

	1	6	12
Warranted	$ .50	$ 2.75	$ 5 00
Selected, warranted	.75	4.00	7.00
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Moore's Strain of Italians

recommended by the largest honey-producers in the world. See how business grows:

Two years ago, O. J. Hetherington, Saginaw, Mich., ordered a queen of me. This year he orders another, and says: "I got a queen of you two years ago, and she was a good one. She has done well this summer. I want the new one for next season."

Capt. J. E. Hetherington, Cherry Valley, N. Y., who has ordered 13 queens of me this season, says: "My brother in Michigan advised me to try them. He thinks the daughters from the queen from you wintered better last winter than others. They had a hard winter and cold late spring."

J W. Eberly, Strasburg Va., who has just ordered 6 queens, says: "Your name was handed me by Capt. J. E. Hetherington as a queen-breeder, and that you have a good strain of Italian bees.'

So the sale of one queen has caused the sale of 20 more, and *may* cause the sale of many more. No wonder my business has grown so fast that I have been compelled to make a large addition to my queen-rearing apiary, in order to supply the demand for queens. Warranted queens, 75c each; 6, $4.00; 12, $7.00 Select warranted, $1.00 each, 6 $5.00; 12, $9.00. Safe arrival and satisfaction guaranteed. I am filling orders by return mail, and shall probably be able to do so till the close of the season.

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100 - Full - Swarms - Bees

AT $1.00 PER SWARM.

With good laying queen in shipping-box. No hive or comb. Hive extra, $1 00. These bees are for feeding up for winter to make colonies or to strengthen weak colonies, or may be used for requeening. Full directions given. Orders filled as received. Write for further information regarding these bees.

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QUEENS. GOLDEN ITALIANS. Unexcelled for business, beauty, and gentleness. Bred from the best of stock obtainable. Untested, 50 cts. each until Nov. 1st. Tested, $1.00 ea. Extra fine breeding-queens, $2.00 each. E. A. SEELEY, Bloomer, Ark.

Marquette, on Lake Superior,

is one of the most charming summer resorts reached via the Chicago, Milwaukee & St. Paul Railway.

Its healthful location, beautiful scenery, good hotels, and complete immunity from hay fever, make a summer outing at Marquette, Mich., very attractive from the standpoint of health, rest, and comfort.

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SEE THE POINTS!

I have had fifteen years of experience in producing honey and rearing queens; and I am breeding queens from a queen procured last spring from J. F. McIntyre, of Sespe, California. He describes this stock on page 12 of Gleanings for Jan. 1st, as filling the supers when other colonies were actually starving. The drones in my yard are from excellent stock—such as that of J. P. Moore, of Kentucky. I rear queens by the Doolittle method, send them by return mail, and guarantee safe arrival purity of mating, and satisfaction, at 50 cts. each, in any quantity. Money refunded if queens are not satisfactory. Send for circular.

L. H. ROBEY, Worthington, W. Va.

Queens.

Use No Smoke. It is not necessary with the *Sweetheart* strain of bees. A postal card or letter will bring my descriptive circular and price list of these **gentle hustlers** and other strains. I am booking orders for them now, which will be filled in the order received. Don't delay.

A. J. WRIGHT,
Bradford, Steuben Co., N. Y.

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I have for sale 75,000 acres of land, right in the basswood and white clover district of Wisconsin. The land is good, and prices are low. Write for prices and terms.

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Queens from either Doolittle or home-bred Golden Italian mothers. All queens warranted purely mated to Golden Ital'n drones. Each, warranted, 75 cents; tested, $1.00.

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High-grade Belgian Hares.

Does and bucks, of breeding age, from $5.00 to $50.00.

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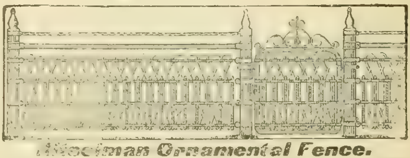

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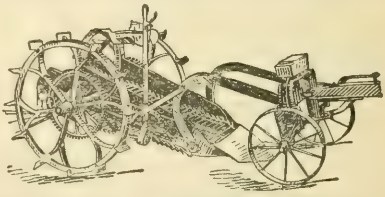
DON'T DIG Potatoes by Hand.

It is a slow and expensive way. The cheapest, quickest, and easiest way is to **USE THE IMPROVED**



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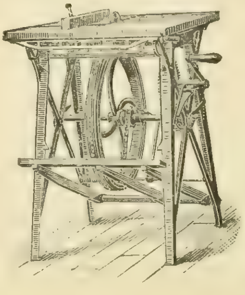
It gets them all, no matter how deep or shallow. Our book explains how. The book is free. Write for it now.
DOWDEN MFG. CO., Box 23, Prairie City, Iowa.



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W. F. & John Barnes Co.,
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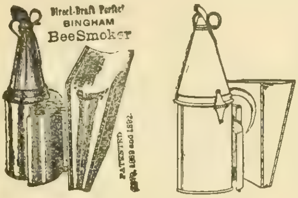
Rest of the Year Free.

Along in Nov. or Dec., near the end of the year, many journals offer "the rest of the year free" to those who subscribe for the ensuing year—I am going to make this offer NOW. Perhaps you are thinking of subscribing for the Review next Jan.—send your dollar NOW, and get the rest of this year FREE. The sooner you subscribe, the more you get. For $2.00 I will send the Review the rest of this year, all of next year, and one of those Superior Stock Queens that I have been advertising. Queen alone for $1.50. Queens go by return mail.

W. Z. Hutchinson, Flint, Mich.



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DEAR SIR:—Inclosed find $1.75. Please send one brass Smoke engine I have one already. It is the best smoker I ever used. Truly yours,
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MADE TO ORDER.

Bingham Brass Smokers

Made of sheet brass, which does not rust or burn out; should last a lifetime. You need one, but they cost 25 cts. more than tin of the same size. The little open cut shows our brass hinge put on the three larger sizes. No wonder Bingham's 4-inch smoke-engine goes without puffing, and does not drop inky drops. The perforated steel fire-grate has 381 holes to air the fuel and support the fire.

Heavy tin smoke engine, 4-inch stove per mail, $1.50; 3½-inch, $1.10; 3 inch, $1.00; 2½ inch, 90c; 2-inch, 65c. Bingham smokers are the originals, and have all the improvements, and have been the standard of excellence for 22 years. Only three larger ones brass.

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We Are Importers and Breeders

of Belgian Hares. Our stud is led by Wantage Fox (score 96); Champion Duke of Cheshire (winner 13 First and Gold medal); Buttercup (score 96). We have an unusually good lot of youngsters. For prices, etc., address our Chicago office.

California Belgian Hare Association,
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BEE-SUPPLIES!

We have the best-equipped factory in the West. Capacity, one carload a day; and carry the largest stock and greatest variety of every thing needed in the apiary, assuring BEST goods at the LOWEST prices, and prompt shipment. We want every bee-keeper to have our FREE ILLUSTRATED CATALOG, and read description of Alternating Hives, Ferguson Supers, etc. *Write at once for a catalog.*

We also manufacture TANKS of either wood or galvanized steel, all sizes, any form, and for all purposes. Price list free.

KRETCHMER MFG CO. Red Oak, Iowa.

Queens! Queens! Queens!

Closing-out Sale.

Owing to other business, I wish to close out my present stock, and will make price very low for next thirty days.

Untested, each	$ .55
Untested, per ½-dozen	3.00
Warranted purely mated, each	60
Warranted purely mated, ½-doz.	3.50

These queens are bred in full colonies, from home-bred and imported mothers. Have both light-colored and dark leather-color strains. If you can use any, order soon, or may not be able to supply you. Address

W. W. CARY,
Lyonsville, - Mass.

Black and Hybrid Queens!

— IN FACT —

ALL INFERIOR QUEENS!

should be replaced with good young ones. With such queens you will have better success in wintering, and a strong colony for the earliest honey-flow. I am a honey-producer as well as a queen-breeder, and know the value of a good queen in a honey-hive. I have selected for my mothers, queens that I consider perfect in every respect. Their bees are large, gentle, and wonderful honey-gatherers. My drone-mothers are also carefully selected.

Queens Go by Return Mail.

One untested queen, 50c; 12 for $5 50. One tested queen, $1.00; 6 for $5.50; 12 for $8.50. Write for prices on larger numbers.

$10 Reward to the person who sends me the most money for queens between April 1 and November 1, 1900.

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One-pound square, $5.00 a gross; with labels, $5.60 a gross.

Cartons & Shipping-cases

for all sizes of sections. Our cartons are of a superior quality of cardboard, but cost no more than others. Sample free.

Untested Italian queens, 60c. Tested, $1.00. Catalog free.

I. J. Stringham, 105 Park Place, N. Y. Apiaries at Glen Cove. L. I.

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Honey Column.

CITY MARKETS.

New York.—Demand for comb honey good. Shipments are coming forward now, but the output is equal to the receipts. We quote as follows: Fancy 1-lb. sections, per pound, 16; A No. 1 white, 15@16; No. 1, 14@15; No. 2, 12@13; No. 1 amber, 12@12½; No. 2 amber, 11@12; fancy buckwheat, 1-lb. section, per lb., 11@11½; No. 1, 10@11; No. 2, 9@9½. Extracted white in demand at 8@8½; light amber, 7@7½; amber, 6½@7; buckwheat, not much called for, 6. Beeswax, demand limited, 28@29. Chas. Israel & Bro.
Sept. 22. 486 Canal St., New York City.

New York.—We are having a good demand for comb honey. All grades and fancy white find ready sale at from 15@15½, and exceptionally fine lots at 16; No. 1 white, 14; No. 2, 12@13; amber, 11@12; buckwheat, 9½@10½, according to quality. Extracted in fair demand. White, 7½@8; light amber, 7; amber, 6 6½; southern, 65@75 per gallon, in barrels, according to quality. Beeswax steady at 28.
Hildreth & Segelken,
Sept. 19. 120, 122 West Broadway, N. Y.

Cincinnati.—The demand for fancy comb honey is good. It finds ready sale at 16@16½; No. 1, 15. The demand for extracted honey at present is slow, and offer the same by the barrel as follows: White clover, 8½@9; southern, 6½@7½; Florida, 7@8, according to quality. Beeswax good at 27. The above are *my selling prices.* I do not handle any honey on commission, but pay spot cash on delivery. C. H. W. Weber,
Sept. 21. 2146 Central Ave., Cincinnati, Ohio.

Chicago.—The receipts of comb honey are not heavy; and the best, that which grades choice to fancy, sells at 15@16; good to No. 1 grade, 13@14; amber, 11@12; dark, 9@10. Extracted white, such as white clover and basswood, 7¾@8; amber, 7@7½; buckwheat and other dark grades, 6½@6¾. Beeswax, 28. All the foregoing sell quite readily, and the market has a firm tone. R. A. Burnett & Co.,
Sept. 18. 163 South Water St., Chicago, Ill.

Boston.—Our honey market is very strong at the following prices, with supplies very light: Fancy, 1-lb. cartons, 17; A No. 1, 15@16; No. 1, 15; No. 2, 12@13. Extracted, 7½@8½, according to quality. We can see no reason why these prices should not be well maintained right through the season, and advise shipping. Blake, Scott & Lee,
Sept. 17. 31, 33 Commercial St., Boston, Mass.

Albany.—There will be a good demand for honey this season at about the following prices: Comb, fancy white, 15@16; No. 2, 13@14; amber, 12@13; mixed and buckwheat, 11@12. Extracted white, 8@9; amber, 7@8; buckwheat, 6@7. Beeswax, 28@29.
MacDougal & Co.,
Successors to Chas. McCulloch & Co.,
Sept. 20. Albany, N. Y.

New York.—Fancy white, 15@16; No. 1 amber, 13@14½; amber, 9½@11; buckwheat, unglassed, 10; buckwheat, glassed or cartons, 11; white extracted, in barrels, 7@7½; light amber extracted, in barrels, 6½@7; buckwheat extracted, in kegs, 5½@6. Beeswax, good demand at 28. Francis H. Leggett & Co.,
Franklin, West Broadway, and Varick Sts.,
Sept. 18. New York City.

Denver.—Brisk demand for comb honey at better figures. A No. 1 white comb honey, $3.00@3.10 per case of 24 sections; No. 2, $2.65@2.75. Extracted No. 1 white, 7½@8. Beeswax, 20@24.
The Colorado Honey Producers' Assn.,
Sept. 17. 1519 Wazee St., Denver, Col.

Schenectady.—No change of note in prices since last issue. We quote fancy white comb, 16@17; No. 1, 14@15; buckwheat, 10@12, according to style and quality. Considerable extracted is offered, but no demand as yet. Chas. McCulloch,
Sept. 18. Schenectady, N. Y.

Columbus.—Receipts of honey are very light. We quote fancy white comb, 16@17; No. 1, 14@15; amber, 13@14. We are in the market, either for consignment or direct purchase. Evans & Turner,
Sept. 21. Columbus, Ohio.

Detroit.—Fancy white, 15@16; No. 1, 13@14; amber and dark, 10@12. Extracted white, 7@8; dark, 5@6. Beeswax, 25@26. M. H. Hunt & Son,
Sept. 21. Bell Branch, Mich.

Wanted.—Comb and extracted honey. State price, kind, and quantity; also rate of freight to Boston.
Blake, Scott & Lee,
31 and 33 Commercial St., Boston, Mass.

Wanted.—Comb honey. We are in the market for either car or local lots. We especially desire some fancy white clover and basswood. In writing state quantity and price. Evans & Turner,
Town St., Corner 4th, Columbus, O.

Wanted, Honey and Beeswax.—We have a tremendous and growing trade in this line, and should like to hear from all having such goods to sell in any part of the country, with quantity, description, and lowest cash price.
Thos. C. Stanley & Son, Fairfield, Ill.

Wanted.—Comb and extracted honey. Will buy your honey, no matter what quantity. Mail sample with your price expected, delivered Cincinnati. I pay cash on delivery.
C. H. W. Weber, Cincinnati, Ohio.

Wanted.—Comb and extracted honey. State price, kind, and quantity. R. A. Burnett & Co.,
163 South Water St., Chicago, Ill.

Wanted.—Quantity lots of comb and extracted honey. B. Walker, Evart, Mich.

Wanted.—To buy comb and extracted honey. What have you to offer? State price and quantity.
Ed. Wilkinson, Wilton, Wis.

For Sale.—1000 lbs. of a No. 1 comb honey; also 1000 lbs. of extracted.
Wm. Morris, Las Animas, Col.

For Sale.—Finest grade alfalfa honey. Produced right, at the Arkansas Valley Apiaries. Two cans, 120 lbs. net, $8.40. Also small pails and cans. Address
Oliver Foster, Las Animas, Bent Co., Colo.

For Sale.—Extracted honey from alfalfa; 60-lb. cans at 7 cts., and smaller cans.
D. S. Jenkins, Las Animas, Colo.

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Wholesale Dealers and Commission Merchants.
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[Established in 1873.]

Devoted to Bees, Honey, and Home Interests.

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SPECIAL NOTICES BY BUSINESS MANAGER

THE A B C OF BEE CULTURE.

The new edition of the A B C of Bee Culture, which has been fully revised again this summer, will be ready in a short time. See full announcement in next issue.

BETA NAPHTHOL.

Elsewhere in these columns mention is made of the new drug, beta naphthol, for medicating syrups given to bees for winter food. Where the drug can not be obtained at your local stores we can furnish it by mail in ounce packages, postpaid, at 30 cts.; or in lots of 1 lb. (16 ounces), 25 cts. per ounce. By mail, 16 cts. extra.

BEESWAX.

We are again in the market for large quantities of beeswax, and our price from this date until further notice will be 26c cash, 28 in trade, for pure average wax delivered here. When you ship, put your name on the box or in the package, and at the same time write us, stating the quantity you send, and send us bill of lading. It does not pay, as a rule, to send by express.

WANTED, COMB AND EXTRACTED HONEY.

We are in the market for No 1 and fancy white comb honey and light extracted honey, and also for buckwheat extracted. If you have any to offer, please write us at once, stating quantity. If it is extracted, send us a sample by mail and put your name on the sample. In any case, advise us how your honey is put up. We want to hear from parties having honey to sell promptly, as we consider the market now at its best.

HONEY.

Before the last number of GLEANINGS was entirely mailed to our subscribers, the car of honey mentioned had all been sold, and the lots of extracted mentioned are all sold except Nos. 35 and 45 Of these we have some stock still on hand. We have just secured two cars of Colorado comb honey, same as mentioned in our last, which we expect here about Oct. 5th. The price has advanced one cent, and we are obliged to advance our price correspondingly, which will make the price of this stock 16c per pound. From all of the customers to whom we sent this carload we have not received a word of complaint, but many words of praise. We are now negotiating for a number of lots of extracted. Let us know about what you want, and we will advise you what we have to offer.

STURWOLD'S SHOW-CASE.

We are sure bee-keepers generally do not put up their honey as attractively as it should be. A Sturwold case will last years, so the real expense of keeping one or more of these is almost nothing. You will be surprised to see how much honey your grocer will sell if provided with one of these.

This case is 28 inches high and 20 inches square, outside measure, top and bottom. The glass of which it is made is 16×24. The case is to be set up in any grocery, drugstore, or any other place of business where you want your honey exhibited or sold. The frame is of chestnut, filled and varnished, and finished in natural grain. Price, plain, $5.00; with name and address, $5.50. As the glass is very apt to be broken in transit, we will ship them, if you prefer, with the glass boxed separately, at the same price. In flat, no glass or finish, $2.50; glass included, $4.00.

BICYCLES IN TRADE FOR HONEY, BEESWAX, OR CASH, AT $15.00.

We still have on hand a few of the National American bicycles, which we took in payment of account. These are standard wheels, and are listed at $30, but we got them at a very low price. While we have been selling them at $17, yet, rather than hold them over till next season, we have decided to let them go for the rest of the season, at $15.00. Each machine, before it leaves us, will be tested by A. I. Root himself, so that a purchaser may be assured that the wheel will run right when it leaves us. We do not claim these machines are equal to the very best high grades, but they are good value for the money. If you have honey, send sample and we will name you a price we will give in trade. We will take first quality of white comb honey or any grade of extracted.

PRICES OF NEXT YEAR.

The average price of lumber is higher now than it was a year ago when we fixed prices for the past season. We did not then advance prices to the full extent of the increased cost of material. It seems necessary, therefore, to make a further advance in prices for next season, on hives and sections, of nearly 10 per cent. The advance on hives is about 10 cts. each, and on sections 15 to 30 cts. per thousand, depending on the quantity. A sheet with revised prices is in preparation, and these new prices take effect at once.

Special Notices by A. I. Root.

THE SPIDER PLANT—CLEOME PUNGENS.

We planted a lot of seeds in the greenhouse in winter, to get plants for our honey-plant garden; but not a seed grew of the spider plant, and really I do not know why. But along in April, on a bed where spider plants had blossomed and gone to seed the year before, they came up between our strawberry-plants by the hundreds. Some sashes had been put over the strawberries to force them; and it just forced the spider plants beautifully. We transplanted them into one of our 50 foot beds, putting the plants a foot apart from center to center. Just now, at dusk and early in the morning, that bed is about as fine a floral display as I ever saw anywhere. Why, I do not believe the great parks or greenhouse men in the cities have any thing to rival it. The first blossom that opens has a deep brilliant pink, and when it is a little older it turns a little lighter-colored, so there is a gradual transition in shade. The honey is secreted during the night; but bees make quite a roaring over the opening blossoms just before dark the night before; and before it is fairly daylight in the morning the hum or roar, rather, of the bees searching for the nectar is just wonderful. When grown as an ornamental plant the objection is that it makes little or no show during the middle of the day. With the warm damp weather we have been having, the secretion of nectar is frequently so great that it drops off on to the foliage below and on to the ground. A bee loads up, and can not take at one trip all of the nectar on a single floweret Every bee-keeper should have one or more spider plants as a curiosity. We are now gathering fresh seed, which we shall be glad to furnish at 5 cts. a packet. After you have grown one plant you will find plenty of little plants coming up where the first one came up, if the seeds are permitted to drop on the ground. It looks as if the seed, like basswood and many other seeds, needs to be frozen in the soil before you put the glass over it to get early plants.

POTATOES FOR SEED.

Our early potatoes are all dug and in the cellar. We have at present only four varieties. Two of them are old standard kinds—Triumph (either white or red), and Early Ohio. The other two are comparatively new—Early Trumbull and the Century. The Early Trumbull seems to be about as early as the Early Ohio. Some have claimed it to be earlier. The Ohio Experiment Station, I believe, places it at the head of the list in productiveness for an extra early potato. The tubers are very nice and clean, and the potato does not seem to be susceptible to blight. The New Century is a good deal like it, but not quite as early. They are both very promising. The Triumph is probably the earliest potato known; but it is almost sure to blight whenever we have hot weather. On this account it should be planted just about as soon as possible after the frost is out of the ground, and even then blight will probably catch it before it reaches maturity. I have tried planting it in July; but if we have very hot weather in August and September it is apt to blight before it reaches maturity. Prices of any of the above four kinds: 1 lb by mail, 18 cts.; 3 lbs. by mail, 40 cts.; by freight or express, ½ peck, 25 cts.; peck, 40 cts.; ½ bushel, 75 cts.; bushel, $1.25; barrel, $3 00. Our late potatoes are still growing finely. If the frost holds off we shall have a splendid crop. We have four varieties of late potatoes—Maule's Commercial, Carman No. 3, New Russet, and the Craig. These are all extra prolific, and none of them is liable to scab. In fact, we have discarded several varieties just because they were so apt to be scabby. The new Russet is almost scab-proof. Carman No. 3 is very seldom scabby; the same with Craig. On our soil the Craig continues year after year to be one of the best yielders, and less liable to be affected by blight or scab than almost any other; but it does not seem to have as great favor in many places. Prices of the above four varieties; 1 lb. by mail, 15 cts.; 3 lbs. by mail, 35 cts.; by freight or express, ½ peck, 15 cts.; peck, 25 cts.; ½ bushel, 40 cts.; bushel, 75 cts.; barrel, $2.00. The low prices on all late potatoes are liable to be advanced. We make this low offer to any who choose to buy now. While they last we will offer seconds of any of the above for just half the above prices; but this does not include potatoes sent by mail.

KIND WORDS FROM OUR CUSTOMERS.

Your A B C book is written in a clear pleasing style, and is very helpful, especially to beginners.
Aylmer West, Ont., Can. S. T. PETTIT.

Friend Root:—Inclosed find draft for $7.50 for the India famine. I was asked to sell the tickets for our fair association, and I concluded to forego three days of pleasure, and devote the proceeds to India.
Rocky Ford, Colo., Sept. 11. H. F. HAGEN.

PADDLING AN INDIAN CANOE.

I want to tell A. I. R. that an expert (p. 661) needs a double-bladed paddle in order to paddle on either side without changing. I have seen an expert keep up with the ferry-boat across Toronto Bay.
Norfolk, Neb., Aug. 20. W. E. GRAHAM.

STRAWBERRY-PLANTS IN JADOO.

Strawberry-plants by mail received on time, and in superb condition. I never had plants take hold and grow so nicely. I think the jadoo fiber and pot-growing arrangement a grand success, especially when sent by mail. W. B. RANSON.
New River, Va., Aug. 6.

Mr. A. I. Root:—The queen I bought of you May 25 has proven to be a grand one. I introduced her to a colony that I had made queenless by dividing five days before I gave her to them, and in about 27 days I noticed the yellow bees coming out, and they have increased very fast. They are the strongest colony I have now, and seem to be doing more than the other eight combined. J. H. McALLISTER.
Morristown, O., Aug. 31.

The annual meeting of the Northern Illinois Bee-keepers' Association will be held in the court-house in Freeport, Ill., on Tuesday and Wednesday, October 16 and 17, 1900. All interested in bees are invited to attend. B. KENNEDY, Sec.
Rockford, Ill., R. F. D. No. 5.

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The Great Chicago Convention Report will appear in full only in the AMERICAN BEE JOURNAL. This alone will be well worth one dollar. This report begins in the number for Sept. 13. You should read it. The greatest convention of bee-keepers ever held on this continent was that of the National Bee-keepers' Association, held in Chicago, Aug. 28, 29, and 30, 1900.

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GLEANINGS IN BEE CULTURE
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ILLUSTRATED SEMI-MONTHLY
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STRAY STRAWS FROM DR C. C. MILLER

I DON'T OBJECT to a green cover for GLEANINGS, but please paint mine a shade lighter next time.

GLAD TO SEE Jimmie Green on deck again, p. 728. He has the right kind of inside gearing for a bee-keeper, and it was naughty of him to turn the cold shoulder on bees for the sake of bicycles and such things.

THE BELGIAN-HARE fever struck me, but I could hardly see where I could find time to look after another industry, at least till I had more leisure. I've now given it up altogether. According to what I read, Belgian-hare meat can be produced so cheaply, and so many are going into the business, that soon I can buy it cheaper than beef without the trouble of raising it.

FORMERLY it was supposed that when eggs were found in a queenless hive, a single worker was in the laying business, and it is still quite common to read of the presence of a laying worker. If I am not mistaken microscopical examinations across the water showed that where laying workers were present a large number, if not the majority, of the workers had eggs in their ovaries.

"ALL BEE-KEEPERS should understand that it is *bees* that gather honey or nectar, not the number of hives which they have standing in the yard," p. 733. Pound away on that, Bro. Doolittle; you'll get it into the heads of some beginners; but a whole lot of them will persist in trying to winter a lot of weaklings without understanding that they would have more *bees* next June if they would lessen the present number of occupied hives.

TALLY ONE for Iowa. There must be a lot of good people there, even to talk of such a man as our Eugene for Congress. [But Eugene is so modest I am afraid he will not lift a finger to help himself; and a politician nowadays—yes, even a statesman—often has to get out and hustle for himself. I hope our 'Gene-ial Manager will go to Congress. We bee-keepers only wish we could all vote for him, for we would send him with a good rousing majority.—ED.]

I'VE MORE FAITH than formerly in killing queen-cells to prevent swarming. A number of colonies did not swarm this summer after having queen-cells killed once, twice, or three times. Some had swarming delayed two to four weeks by the killing of queen-cells. But generally only eggs were in the cells where destroying them made any difference. If an egg was destroyed in a cell, and a week later a queen-cell was found with a grub in it, it was not much use to make any effort to thwart them.

AFTER READING what you have lately said, Mr. Editor, I'm wondering whether you might not regard a little more favorably that glossometer project on page 731, 1898. No need of an inside bottom; just a plain bottom with the wire cloth at a slight angle; then the bee-keeper could level the dish till the liquid coincided with the wire cloth. I'd like such a dish 17 inches long. [A queen-cage filled with candy, the same as is spoken of on page 734 of our last issue, is about as good a glossometer as can be devised. Your plan may be all right; but it appears to me it would not give quite as accurate a measurement of the tongue as the simple queen-cage which can be fixed up in two minutes of time. If yours is a better plan, fix one up and tell us how it works.—ED.]

SOMETIMES there is trouble with clipped queens and hives close together. I've had a few cases in which a colony swarmed and the queen entered a neighboring queenless colony, where she was kindly received. [You do not explain, doctor, that your hives are in pairs, the individual hives of each pair being some four or five inches apart; is it not possible that you would, therefore, cause more confusion among queens, either virgin or unclipped, than if you had the hives otherwise arranged? In a queen-rearing apiary, if hives are in pairs each pair must be quite dissimilar in appearance from the pair or pairs next to it, either because of shrubbery or because of the arrangement of the hives, or because one hive of a pair is different from the other, and strikingly different from the hive located in the same position in the next pair.—Ed.]

Strange how some foolish idea will go the rounds as if there was something to it. There's that idea of Rambler's. Now, is it possible that bee-keepers in general are so weak in the upper story that, when looking for a queen, they can't remember what they're looking for without saying, "Queen, queen," over and over again? No, sir, Rambler; when I look for a queen I'm after that queen, and nothing short of a call to dinner will call my attention to any thing else. If I were like some other people I know of it might be different. Even saying "Queen, queen," wouldn't do them any good. I can imagine Rambler, frame in hand, softly crooning to himself,

"Queen, queen, queen,
O queen of my heart,
How I wish you were here!"

while the queen he ought to be wishing for was walking across the comb right before his eyes.

Misery likes company, and here's something for those who have not been very successful in rearing young queens. May 29 I formed a nucleus and gave it a virgin. I saw her there nine days later, then she turned up missing. I gave in succession five more virgins and two cells, which I think were kindly received in most if not all cases, and brood was given from time to time so that the nucleus was unusually strong, but I never got a queen to laying in that pesky nucleus till Sept. 12. If any one has done worse than that, please rise. [This is a record-breaking case, sure. I should like to know more about that colony. Is it not possible that it had a fashion of making way with its queens? Possibly they did not lay soon enough to suit their fancies. After using up four or five virgins I should have felt like treating this colony as I would a colony of laying workers, scattering their brood and bees in four or five strong colonies, leaving one comb to catch the few returning bees. Then I do not know but I should feel like taking those bees and brimstoning them. It used to be my practice, when I was working every day in the apiary, to take an "obstreperous" colony or nucleus, and treat it after this fashion.—Ed.]

Some new freak is always coming up among the bees. Lately I took a comb out of a nucleus, and found it regularly supplied with eggs except a cluster of cells at one end, each containing five to ten eggs. "Laying workers," thought I. But all were worker-cells, and directly I spied a fine-looking queen. A few days later it was the same thing. I strengthened the nucleus, giving the queen more room to lay, and after that there was only one egg in a cell. I have often known a queen to lay two or three eggs in a cell here and there, but never before have I seen one dump all her extra eggs in one little spot. [Yes, we very often have queens that will commence to lay irregularly at first, and after a while will get down to business. It is not an uncommon thing for one who receives an imported queen to report that she is "no good" because she scatters her eggs and puts one or two in a cell; but we always advise waiting a little, and giving her a further trial. So far as I can remember, these queens have in every case, with perhaps one exception, turned out all right.—Ed.]

August 18 I took a queen from a nucleus and gave it a caged queen-cell due to hatch Aug. 22. Aug. 31 I gave it a frame of young brood. Sept. 18 I found eggs and brood, and on the same comb, not two inches apart, two queens, one a virgin by her looks. The case looks a little like this: When the frame of brood was given Aug. 31, the bees started a queen-cell as a precautionary measure, because their queen was not yet laying, and then allowed both to continue. But did you ever know of such an exception before? Now suppose these had been black queens, and I had sent to a queen-breeder for an Italian, which I introduced after killing one of the blacks without seeing the other. The Italian would be killed, and three weeks later I would find only blacks hatching, and would feel sure a black queen had been sent me. [This can and probably does explain how, in one way, a good tested queen turns out to be no better than a common black. Lately we have been clipping our best queens, and only this week we had a case where a customer reported that an imported we had sent him was nothing but a hybrid. We wrote back, and asked if the queen now in the hive had a clipped wing. We have not yet heard from him, but are morally certain that one of two things is true—either that he does not know how to distinguish hybrids from pure Italians, or that the queen has got supplanted in the manner you speak of. It has very often happened, when we have ferreted the matter clear down, that there has been an exchange of queens. The customer was entirely honest, and supposed that we had, of course, made some mistake.—Ed.]

PICKINGS

FROM OUR NEIGHBORS' FIELDS

BY STENOG

The bluejay's angry shriek, the withering leaves,
Foretell stern Winter's blast;
The summer scarcely seems to come
Before—"the summer's past."

AMERICAN BEE-KEEPER.

The issue for September contains a good view of the apiary of Mr. H. L. Jones, Goodna, Australia. Better than I can do it myself, the editor describes the phenomenal success of Mr. Jones as follows:

> It is interesting to note the progress of our industry around the world; and the case of Mr. Jones corroborates the fact already established, that, in the hands of the *right man*, very limited means and a small start frequently outgrow and surpass the more pretentious business which, though having abundant capital, has not the skill and natural adaptability neces-

sary to success. Mr. Jones' start in bee-keeping consisted of a single colony captured in the woods, in 1880 Owing to limited means the care and increase of his stock was carried on for several years without so much as a smoker, honey-knife, or extractor. The season of 1884 brought him a crop of honey averaging over 228 pounds to the hive from his nine stocks, together with an increase to 35 colonies.

He says further :

> Had I known then as much about the production of honey as I do now, I should certainly have been richer by some thousands of pounds. Even to-day, with all the low-priced literature upon the subject of bees, many are content to grope along in ignorance without it.

* * *

Mr. Fr. Greiner contributes an interesting article relative to the various characteristics of blacks, Carniolans, and Italians. I quote one paragraph :

> I will now name two points wherein the Italians excel the other two races (blacks and Carniolans). First, they generally store much more pollen in their combs; second, they are apt to gather more propolis, both being undesirable properties, considered from the comb-honey producer's standpoint.

As to capping honey, Carniolans stand at the head of the list, and will send out the most swarms ; Italians will swarm the least. "If left undisturbed," the writer says, "Italian bees will fill their brood-nest with honey to such an extent as to prevent the rearing of an excess of brood. This is probably the reason why they do not enter the section-cases as readily as the blacks and Carniolans. On this account I would not hesitate to adopt generally the Italian bee." In capping, Mr. Greiner says Italians fall away behind. While circumstances and locality might at times modify the results obtained by the use of these three kinds of bees, there is no doubt that Mr. Greiner is correct in most of his conclusions. As a fitting wind-up to this matter I would refer the reader to the article of S. P. Culley, in this issue. He suggests getting a bee containing the good qualities of all these strains and others.

* * *

The following, from the Syracuse *Post-Standard* of Sept. 5, is interesting reading :

> An enterprising young woman who will enter Syracuse University this fall is Miss Mary Mills, from Fairmount. She will pay her own college expenses, and she is to do it by her bee-keeping. For two years since she was graduated from the High School she has been in the business at her father's farm, two miles outside of the city, and she has made it pay. At the State Fair last week she took a first prize for her bees and several prizes for her honey.
>
> Miss Mills has found that this kind of work brings her in more money than school-teaching or some other things might. Her eighty colonies of bees she takes entire charge of. They are in a vineyard, this site being chosen so that, when they swarm, they will be likely to alight on the vines, where they can be easily captured. When they take to a tree she gets a ladder and goes after them just the same. She is dressed so that she can. The costume that she wears in her work is built specially for it. It consists of bloomers and a short skirt of denim. Brown is the color chosen, because, as Miss Mills says, bee-keepers have observed that the bees like this shade, and are much more amicably inclined toward people who wear it when about them. On her head she wears a regular farmer's straw hat. It is tied around by a black silk veil tucked snugly into her neck all around for protection, because if the bees should get down her collar there would be trouble. On her hands she sometimes wears kid gloves, but this she says is more to keep her fingers soft and pliable for playing the piano than because she is afraid of the bees. They seldom sting her, anyway, and she often works among them with bare hands.
>
> A person's safety among the bees, she says, depends much upon his or her temperament. One must be perfectly calm and self-possessed. The slightest nervousness they notice in a moment, and even a twitching of a muscle of the face will attract their attention and excite their animosity.
>
> The hives must frequently be fitted out with frames and boxes in which the honey is stored. All the carpenter work necessary in putting these together Miss Mills does herself, and she can handle a hammer easily. Much of her honey she sells in neat little pound boxes. More of it she sells as extracted honey, which is used as a syrup. The extracting is a special department of her work. The honey is taken from the hives in frames, not boxes, and these are placed in a machine which throws the honey out by means of centrifugal force.
>
> Sweet-clover and alfalfa-clover and basswood blossoms are relied upon to furnish the best honey. Buckwheat blossoms furnish a darker variety, which is not so much in demand. She subscribes regularly to a magazine devoted to bee culture. Her bees take about three days a week of her time.

* * *

The following was meant by Dr. Miller for a Straw in the previous issue ; but as it belongs more particularly in this department I concluded to use it here :

> Will Stenog please rise and explain the concealed joke on Bro. York that he has in asking what kind of clover it was where "one sweet clover plant" was set to each hive? If he means that in this case "sweet clover" becomes a compound adjective, and must be written "sweet-clover," Stenog better commence nearer home before throwing stones at the Chicago fellow.

Yes, I simply meant that "*sweet-clover* plant" indicates a plant from sweet clover, and that "sweet *clover plant*" means any clover plant that is sweet. The two meanings are exactly opposite, as all will agree. But I do object to the idea that I was "throwing stones" at anybody, or even saying any thing unkind, much less to the writer, whose name I did not even notice. But *he* noticed it, and in apparent indignation he orders GLEANINGS discontinued. I have explained the matter to him, and hope all will be pleasant in the future. Dr. Miller says, very rightly, the "drive," if any, was on Mr. York, and not on his correspondent. But isn't life too short to be spent in taking umbrage at such trifles? and perhaps the omission of the hyphen was a trifle too. Although I have always studiously avoided the hurting of any man's feelings in any thing I have written, I see I must be still more careful.

GENERAL CORRESPONDENCE

HONEY VINEGAR.

How to Make a First-class Article for Market.

BY MRS. A. J. BARBER.

I have had so many inquiries about making vinegar lately, that, being very busy, I can not answer by letter, so I will write to GLEANINGS for all. To give short directions, I will say :

Use about one pint of honey to the gallon of water (you will soon be able to tell by the taste when it is sweet enough). Put it into a keg or barrel with a good tight head, and leave a hole not larger than one inch for ventilation. Keep it in a warm place and put in some good vinegar or yeast to start it. After it gets to working, draw off a pailful now and then and pour it back; or if you have more than one keg, pour from one to another. It helps new vinegar to put old vinegar into it; but it spoils the keeping qualities of the old vinegar to put fresh vinegar into it.

We save all the washings from the extractor, tank, strainers, and cappings, for vinegar. We wash the cappings by pouring warm water through them again and again, until about all the honey is out of them. They are then rinsed by pouring a pail or two of cold water through, when they are in fine shape for the wax-extractor. The water is all put into the vinegar-barrels. It took us two years to get really good vinegar from the start in new barrels. Now that we have our old sour barrels and good vinegar to start with we can get good vinegar this season from last year's washings. For the last four years we have made from four to twelve barrels each year. We have twelve for market this year, and now at the last of July four new ones coming on for next year. We expect to make several more before the season closes. Each barrel should be cleaned every other year. Unless this is done the "mother" will begin to decay and break up, making the vinegar flat in taste and muddy in color. The barrels that we started vinegar in this spring had the sweet water put in with the remnant of last year's salable vinegar. Next spring the vinegar in them will be drawn off and put into clean barrels to keep until sold. When we get an order for a barrel of vinegar we draw off again and put into a clean barrel. By this time there is but little "mother" forming, as the vinegar is ripe and will keep indefinitely.

MAKING HONEY VINEGAR

We have a house specially for our vinegar. It is a double-wall frame with a ten-inch space between walls, packed with sawdust. The ceiling is covered with several inches of sawdust, and the vinegar keeps nicely all winter. We put the barrels into the house in November, and take them out in April. They stand in the sun all summer.

When we take them out we find which barrel has the best vinegar. The vinegar is drawn off and put into a clean barrel. The head is then taken out of the one just emptied, and it is well scrubbed with water and a stiff broom. When clean it is reheaded, and the contents of the next best barrel drawn off and put into it. Thus the barrels are cleaned and the vinegar put in shape for market. We have a long low bench or platform for the barrels, where they stand in two rows. The first barrel drawn off is placed at the east end of the south row. That is No. 1, as it is the first to be ready to sell from. The next barrel drawn off being next best is placed next to No. 1 on the row, and is No. 2. So we go on till we get to No. 12. When we sell a few gallons from No. 1 we draw from No. 2 and replenish it; draw from No. 3 and fill up No. 2; from No. 4 and fill No. 3, until we have gone through and left the empty place in No. 12. When No. 12 is empty, or nearly so, we fill it with sweetened water again, and it makes No. 1 for next year. Nothing helps so much to make vinegar clear and sparkling and sharp as the working from one barrel to another. It seems to act like kneading on dough. It sounds, to tell of it, like a lot of work; but, really, when one has good faucets in all the barrels it doesn't take long to run a few pailfuls from one to another of the whole lot. I try to get at mine once a month, and oftener when we sell a large quantity.

Our neighbors come to get honey vinegar in preference to the cider vinegar at the stores. We have kept some in the stores, but have never had enough to supply them yet. We use all kinds of refuse or waste honey, such as broken combs and dark unfinished sections, and this year we had about 300 pounds of dark strong honey that came from weeds before alfalfa bloom. That will go into the vinegar next year if I don't need it to feed my bees in the spring.

I believe the secret of success in the bee-business lies in looking after every part of the business, and saving every thing produced; and what can not be marketed as first-class honey should be turned into first-class vinegar.

I have been asked if honey vinegar will keep pickles. I have put up quantities of them in the last three years, and have never lost any, but have sold a great many, both of whole and mixed pickles. We are using mixed pickles now that were put up last August, and they are as firm and brittle as they ever were. If the vinegar is old enough, and has been properly handled, it is of the very best quality for pickling or any thing else that vinegar is used for.

Mancos, Col., Aug., 1900.

ARE BELGIAN HARES A MENACE?

Interesting Examples of the "Survival of the Fittest;" how many Times a Doe may Breed in a Season.

BY A. J. COOK.

I am asked if there is not danger that the Belgian hare may gain its liberty in the United States, and become as great a pest as did the English rabbit when introduced into Australia. It will be remembered that, soon after the English rabbit was taken to Australia, it became so common as almost to threaten the very existence of profitable agriculture. So serious seemed the impending danger that a very large reward—I think it was $100,000—was offered for some cheap and practical method whereby the new comers might be exterminated. The experience of introducing the mongoose into Jamaica was another case in point. Introduced into the island to eradicate the cane-rat, it not only did this but also destroyed poultry, and even changed its habit and commenced depredating upon the fruit, so that the Jamaicans soon found they had caught a Tartar. They, like the people of Australia, would now gladly be rid of what they had introduced in the hopes of receiving large benefit. Australia is very similar to California in its general character, which should lead us to greater caution. In the East, the thickets and brushwood are less abundant, and we should have reason for less fear. Again, Australia has a lower type of animal life. It is back-woodsy, so to speak, in the way of development, and we should rightly expect that it would be less able to hold in rightful check any animal from America or the Orient, and especially an animal so prolific as the rabbit. Jamaica is a small island, and so we should have much reason to expect danger there as has been experienced with the mongoose.

In California, Colorado, and other sections of our country where rocks and chaparral make a hiding-place for hare and rabbit, there have been developed along with rabbit and hare the coyote, fox, and wild cat, which are ever working to preserve the balance of nature, so that neither rodent nor carnivore will gain the upper hand. These hungry carnivores have developed a cunning craftiness which compels an equal cunning, and a peculiar cunning withal, in rabbit and hare, if they would resist extermination. Thus the jack-rabbit and cotton tail of our western plains, mountains, and California coast, are peculiarly fleet, are possessed of very acute sense organs, and are exceedingly alert in all that protects them against their rapacious enemies. Indeed, in Northern California there are what are called the wire-fence rabbits. They have taken this name from the habit they have of dodging from one side of the fence to the other to escape their hawk enemies. I hope that all the readers of GLEANINGS have or will read that most fascinating book, "Wild Animals I have Known." It has rare merit, and may well be numbered among the classics. The story of Molly Cotton-tail, as given in that book, is very true to life, and very little if any exaggerated. It plainly shows how hard a time a new comer will have to endure the struggle for life, which is ever enforced by the hard conditions of all our Western regions. But we are not confined to theory alone in forming a judgment in this matter. The more alert and brisk English rabbit has been repeatedly brought to California, and has often escaped from domestication. In every case it has been quickly exterminated. It did not find the simple easy conditions of Australia to combat. Indeed, the struggle in its new home is much more severe than that of the British Isles, and hence its inability to brave the perils of its new environment among us.

The Belgian rabbit, or so-called hare, would ill compete with even its British relative in any such trying conflict. It has been bred carefully, and, as in case of all domesticated animals, would lose much of the sagacity and alertness which the harder condition of wild life ever tends to develop. In a recent article in the *American Bee Journal* I referred to these Belgian rabbits as inactive and loggy. I have been criticised for this assertion. True, as we see the young rabbits frisking in their small pent-up quarters we might well regard them as quick, fleet, and full of energy. But on the race-course, in the lead of coyote or fox, there could be but one conclusion. It stands to reason that these animals, fondled and carefully tended in the small limits of the rabbitry, must lack acumen, fleetness, and vigor. They are the short-horns, if we may use the word, among the bunny tribes. As has proved true with the English rabbits, so it would certainly be even more true that the Belgians that escape from domestication would mean speedy death and extermination. We may be perfectly sure that they would fall much behind even the English rabbit in power to resist the hard conditions which meet all such life from Colorado to the Pacific Coast. I feel, then, that, while we should exercise the utmost caution in introducing new species of bird or mammal into every part of our country, we run no risk whatever in bringing in these favorites of the fancier, the Belgian rabbits. It is probable that very few if any will escape from the breeder. We should almost as soon expect the short-horns and Herefords of the western plains to escape into the wilds of upland and mountain, and would be hardly less surprised if the latter should develop into disturbing factors than we should to learn that these handsome rabbits had done so.

PROLIFICNESS OF THE BELGIAN HARE.

The query comes to me as to how many litters of hares it is safe and profitable to produce in a single season. I have seen the extravagant statement that ten litters of eight each could be produced in a year. I presume this is possible, but it would certainly not be wise in even so genial a clime as Southern California. One of our wise, conservative breeders told me a few days ago that he preferred to rear only eight litters a year. His practice is as follows: He breeds the does thirty days after the young are born. In two weeks he weans the young, which leaves the doe two weeks' freedom before a new litter is brought forth. He resides in Southern California, where the trying months are in mid-summer, and thus he gives the does the months of July and August for rest and recuperation. I know of another gentleman who has very high-priced animals, some of which he has imported at great cost from England, who is even more careful of his animals. He is satisfied with four litters in a year. I think I have read from good authorities that it is safer to be content with even as few as three litters a year. I should think that, unless we had very high-priced animals, and would very greatly deplore loss of health and life, with wise care and management five litters a year would be safe and profitable. Surely there are very few finer-looking herds than the one owned by our old friend Mr. O. Clute, the gentleman first referred to above. I do not believe that, with his experience, he would have settled down to the practice of producing five broods a season unless such a course was wise and politic.

WHAT SHALL WE BUY?

A friend from Iowa writes, asking advice regarding the purchase of Belgian hares. I have seen rabbitries where stock of very high price was purchased, and others where a very moderate sum was paid. The difference in the animals would not, it seems to me, warrant a man, certainly not if in limited circumstances, in paying fancy prices. Why not start in with cheap animals, and then, if one finds the business pleasant and profitable, breed up by securing more and more excellent bucks? This course certainly involves no risk. It is always safe to purchase animals at a price which the market will warrant. It is always more or less hazardous to pay fancy prices, which are often, except in the hands of the expert business man, only indicative of fictitious values.

Claremont, Cal.

[Prof. Cook's advice in the last paragraph is most excellent. It applies to bees and queens as well. Beginners very often send in and ask for an imported Italian or some high-priced breeding-queen. Of course, we assume they know their business; but wherever we can offer advice safely we urge the buying of low-priced untested — the cheapest Italian queens that can be had. It is expensive business to experiment with fancy and high-priced stock; and for this reason I had thought that, if I went into the Belgian-hare business, I would buy the commonest stock — such as is sold for market, and which I could get at a regular market price. In spite of extravagant statements that are often made concerning this business, I am one who believes, from what I have read, seen, and heard, that there is both pleasure and profit in the growing of these little animals — pleasure to the children certainly. Of all the enjoyable days of childhood, those I spent with my pigeons and tame rabbits were the most so.—Ed.]

BEES FROM TEXAS TO CUBA.

A True Story of how Bees and Bulls made a Trip Together to Cuba.

BY F. H. SOMERFORD.

While engaged in the production of honey in Texas I was never entirely satisfied with results, always thinking too much work was there expended for too little gain; for this part of the State was not a good location, linn being too scarce and horsemint very scarce, owing to the fact that the great prairie near which I was located had long since fallen a victim to King Cotton. However, during the good years there was usually some willow, rattan, elm, and some other little inducements to the bees to encourage spring brood-rearing. Later on, the huckleberry gave them employment for two weeks, more or less, from which some little surplus was taken. After this, nothing was to be expected till linn, which usually, from May 25 till June 25, kept the bees tolerably busy after this. Some years some surplus was stored in August and September from milkweed and morning-glory and camomile. About 80 lbs. per hive was a good average for a good year. Remember, these plants I've been mentioning are greatly affect-

THE COLORADO ALFALFA-FIELDS.

The picture in the upper right-hand corner shows my brother Herman standing in an alfalfa-field holding up some of the alfalfa which had lodged badly, to show how tall it is. The average height was 4 ft. 9 in. The stalk which I sent you some time ago measured 6 ft. 2 in., and also came from this field.

The second picture shows a large field of alfalfa in full bloom. Both of these exposures were made near Denver. The lower picture represents our Mount Carbon apiary, of which Mr. F. L. Thompson has charge at present. The same contains a little over 140 colonies at present. FRANK RAUCHFUSS.

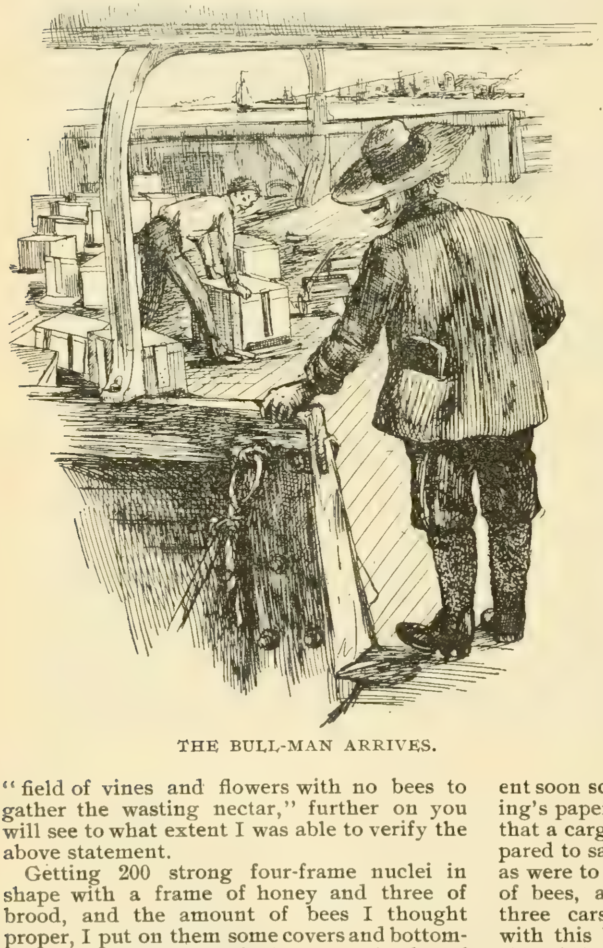
Denver, Colo., Aug. 27.

[I received a set of photos from Mr. Rauchfuss, and, being pleased with them, I had them engraved. Then I asked him to write a story to fit; but as Mr. R. is manager of the Colorado Honey-producers' Association, an association that sells something like 20 or 25 carloads a season, he did not have time to tell us a long story, so he sent one short and sweet.—ED.]

ed by the weather. In early spring, linn is especially susceptible to cold damp weather at the time of budding out, at which time a few days of unfavorable weather will ruin the prospect for honey from that source, and about one year in four it is entirely ruined, and one year half ruined at this time of season; later on, at the time of flowering, if a little drouth strikes it but half a crop can be expected.

From this count, putting the two half-years together to make a good year, striking out the bad year entirely, we see there could not be counted on more than two honey years in every four.

With these painful facts ever in mind I was always ready to move when I thought by so doing I could better my financial results. Therefore, having heard a great deal of Cuba, which was said to be, after the war, almost a "field of vines and flowers with no bees to gather the wasting nectar," further on you will see to what extent I was able to verify the above statement.



THE BULL-MAN ARRIVES.

Getting 200 strong four-frame nuclei in shape with a frame of honey and three of brood, and the amount of bees I thought proper, I put on them some covers and bottom-boards that lacked two inches on each edge of being as wide as the hive, whereon both at bottom and top on each edge, or four strips to the hive, the wire cloth was put on, which I thought would give plenty of ventilation, which proved to be a mistake. I loaded into a stock-car. This kind was preferred, as it seemed to give such nice ventilation, and the weather not yet cool, as it was September, and that month in the central part of Texas offers usually but little change from the month preceding.

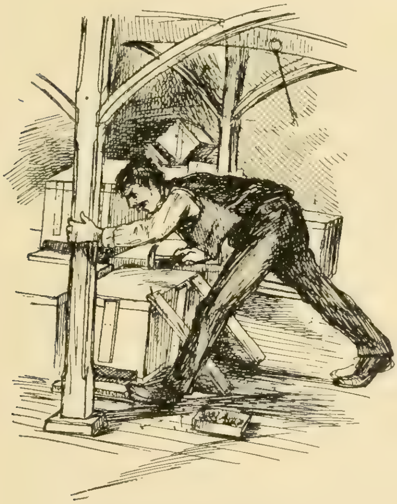
The open stock-car gave entirely too much light, as the result of my experience, though with the thumping and jarring of the car they crowded to the strips of wire cloth where the light from the open car was strong, thus deserting their brood, and all that was unsealed was lost *en route*.

After a trip of 130 miles, which occupied about 20 hours, lying on sidings, waiting for connections, etc., upon arriving at the seaport I found that, owing to some misunderstanding, the ship could not begin loading for two days, notwithstanding the fact the ship agents had wired me they expected to be loading the day of my arrival.

In the meantime I took care of the bees, which required considerable attention, for I found quite a few colonies had enough dead bees below to prevent the circulation of air from below, the strips of cloth being literally closed or clogged with them. I spent the two days in tearing loose the wire cloth, cleaning out dead bees, tying in broken-down combs, and putting them as nearly in shape as was possible, and in so doing many bees were released or flew out; besides this, in the town were many colonies of bees: the few broken combs with the scent of wasting honey soon attracted plenty of bees to intimidate passers-by. This did not amount to so much, though, because this was one of the outer wharves. The boat was chartered for horses, cattle, and jacks, this being the only kind that plies between Galveston and Havana direct. The passenger-boats go round by New Orleans.

Dame Rumor, vile serpent that she is, whose tongue seems to be loose at both ends, soon had the story stalking around town that bees were to be shipped on the steamer to Havana, Cuba. The ever alert newspaper correspondent soon scented a subject, and the next morning's paper stated in a rather cunning way that a cargo of bulls and bees was being prepared to sail—700 of the wildest bulls of Texas were to be shipped together with a carload of bees, a carload of Texas bronchos, and three cars of wild jacks and jinnies, and with this beautiful combination of livestock aboard the good ship the interesting journalist thought if calm reigned without it would be all that could be expected, and that peace within would be impossible. That the lion and lamb could lie down together was perfectly feasible; but for bulls, bees, jacks, jinnies, and bronchos, or mustang ponies to lie down together peacefully was a fact that yet remained to be recorded. The journalist thought that such a cargo should have been sent in time of war.

Luck would have it that the bull-man got his morning paper; the jack-man and the mustang-man were also men of letters, and of course received their morning paper, and your humble slave of misfortune was also an enthusiastic reader. Having heard that possession was nine points in law, it very naturally occurred to me to get my bees aboard that boat at once. Forewarned is forearmed. Such was my case. Having the ever-ready bike at hand I mounted and flew like the news of the morning to the office of the ship's agents, and with the grave complaint that, the two days preceding, the sun had occasioned great loss to my bees, which, of course, was true, and that they would either have to furnish shade for the bees or let me load them on the ship at once, which, after phoning down to the stevedore of the ship, was decided upon at once. So I flew back, and with help soon had the bees aboard—hives in flat and other equipment stacked to one side to be loaded at leisure. In the meantime the volume of visiting bees steadily increased, and soon scented the hives aboard the ship, and flew all in and around them, alighting on the wire cloth to learn what the bees inside were fanning so faithfully about. At this juncture the bull-man arrived on the scene to learn if the newspaper reporter had stated the truth about the bees. He was greatly alarmed, declaring it would be impossible to put any kind of stock on board with the bees flying as they were.



TROUBLE AT SEA.

I tried to explain to him that the bees were gentle, and would not sting unless they were disturbed, all of which was Dutch to him, for he had known bees all his life, and they had always stung, and these were no different from any others. He left me, boat, bees, and all, going down to raise the agents for allowing the bees aboard. It was not long after this that a messenger boy brought me a message to come to the office at once. I went, but was framing all sorts of complaints in my mind. Upon arriving at the office I found things in a rather bad state. The ship's agents had just received a cablegram from the agents in Havana and New York asking that bees be left for another trip; but it was too late, and I had too many kicks coming on my side, for I'd been written and wired passage was reserved for me, and the number and size of boxes, and I had also been informed that loading would be completed and ship sail at a date that had past, and still nothing was being put on the boat, and I losing bees every hour. We at last reached an agreement. I went back and partitioned off the part of the boat I was occupying, with mosquito-netting, and the bulls, jacks, and bronchos were put aboard, and the place was bidden adieu on Monday morning with a pretty sea ahead. All went quite pleasantly until the evening of the second day, when we encountered a gale and bad sea. Our ship of twenty thousand tons displacement leaped, wallowed, rolled, and soon had bulls piled one on top of another, with legs and horns broken—bleeding, goring one another, and doing all sorts of injurious things, and continually bellowing. Matters went from bad to worse with all animals aboard. The continual pitching of the ship so worked the top layer of hives loose they enjoyed themselves rolling and banging about. I went in on top several times to refasten them, each time receiving bruises more or less, and part of the time I was badly sea-sick. I soon overcame the sickness, though, missing only one meal at the table.

During the night things quieted down, and the next morning the work of throwing overboard dead cattle was commenced. Over fifty head were hauled out and delivered to the sharks. As to the bees, they were in a troubled condition. Fresh water was given them through the screens. Many had ceased to hum. I sighted the mountains along the north coast of the province of Pinar del Rio; with the captain's glass I could see the palms growing all over them. Later, on drawing nearer to land we could see many interesting objects on shore. While talking with the captain I asked him what kind of sea we had had, and he replied, "Twenty-five to thirty feet."

To be continued.

PREPARING BEES IN SINGLE-WALLED HIVES FOR WINTERING ON SUMMER STANDS.

BY W. D. KEYES.

Mr. Editor:—I notice on page 734 that Mr. Thos. McGowan, Lock 4, Pa., did not succeed well last winter with his bees prepared with the Hill device for outdoor wintering. November 1, 1898, I had 28 colonies on summer stands with ⅜ open space above brood-frames; and though most of them were very strong, with plenty of stores, all perished except one, and it barely escaped with a handful of bees left. The weather was very cold for weeks together, and the open space above the frames made it impossible for the bees to maintain warmth enough in the brood-chamber to enable them to move out to their stores when all the honey within the cluster was exhausted.

If Mr. McGowan, and other bee-keepers so disposed, will each prepare a few colonies in the following manner I feel sure they will feel highly pleased with results, and I shall be glad to have them report in GLEANINGS issued June 1st next year:

Promptly after the first frost that kills vegetation, and during the warm part of the day, strip the hives to be prepared, in succession, of every thing, down to the top of the brood-frames; and if, upon examination, the outside frames are found to contain little or no honey, replace them with frames filled with sealed honey. If no frames of sealed honey are at hand, the same result can be accomplished by feeding up to, say, 20 pounds per colony.

Cover the frames with a quilt of heavy brown muslin just the size of the hive, without any thing between the quilt and the frames. Take a strip of ⅞ lumber 4 inches wide, and make a belt just the size of the top of the hive, which, when placed in position, will rest on the edges of the quilt all around and hold it in place. Fill this four-inch space above the quilt full of dry sawdust; put on a cover that will not leak, with a brick or stone on it. Contract the entrance with blocks, to two inches in width, and without any other protection or attention let them remain untouched until apple-bloom next year, when upon examination they will doubtless find their bees in excellent condition; and if the weather is warm and favorable, they can put on one tier of baited sections with good prospects of getting some delicious apple honey.

To satisfy themselves as to the comfort this method gives the bees, let them go to one of the hives during the winter when the mercury is down to from ten to twenty degrees below zero, take off the cover, and shove the hand down through the sawdust to the muslin quilt just over the cluster, and they will find it dry and surprisingly warm.

I have had good success with five, six, eight, ten, and thirteen frame hives prepared for winter in this way.

The sawdust must be kept dry; and if the bees gnaw through the quilt in the spring, before time for supers, it will be detected by sawdust at the entrance, and it will be necessary to replace the muslin with oilcloth, and put the sawdust in place again. The quilts when removed in the spring will be more or less propolized, but sufficiently porous to allow slight ventilation upward into the sawdust, which thus removes all moisture and impure air out of the brood-chamber, rendering it both comfortable and healthful.

If in trying this experiment the bees have to be fed up, instead of two frames of sealed honey use 6 pounds of granulated sugar, 3 pounds of water, and a pound of golden-drip corn syrup, the latter to prevent granulation in case all should not be sealed. Bring the whole to the boiling-point, and feed in any practical way, preferably from the top, to prevent robbing.

Kittanning, Pa., Sept. 20.

[Your method is the orthodox one for outdoor wintering, with the exception that there ought to be double walls around the sides and ends of the hives; and while single-walled hives might be warm enough for your climate, they would hardly do where we live, or any place where the frost during the winter runs into the ground along in February and March down sometimes two feet, and where there is liable to be protracted cold of three or four weeks hovering around the zero-point.—ED.]

CANDIED VS. EXTRACTED HONEY FOR MARKET.

A Reply to Dr. Miller and the Editor; the Importance of an Effective Display.

BY CHALON FOWLS.

It looks to me, Mr. Editor, very much as though you and Dr. Miller were putting up a "man of straw" for me to knock down. In Stray Straws, page 644, Dr. M. gives quotations from Doolittle and Somnambulist in which they tell how their *home customers* prefer candied honey, and you proceed gleefully to count them on your side as opposing the plan of bottling liquid honey for the *trade*. And the Muths too—well, that's cool—and I was just chuckling to think I had captured Dr. Miller's biggest gun, and could now use it to defend my own position. Now, if I understand these gentlemen correctly, they persuade their home customers and manufacturers, or all customers who buy in bulk for their own use, to take candied honey, and this plan I most heartily concur in. But when it comes to putting it up for sale in the groceries in small packages, pounds, half-pounds, and the like, I don't understand that they advocate putting it up candied instead of bottling in liquid form. This plan of putting up honey in the candied form for the grocery trade is no new thing. I have no doubt the plan has been successful with the Dadants, but it does not follow that it would be equally successful with others under different conditions.

Although the scheme has had good backing from the start by editorial indorsement in the bee-journals, the pails used for the purpose being advertised by supply-dealers the same as glass packages, yet the plan has not come into general use; and it's my belief that, for the general market, where the producer does not deal directly with his customers, liquid honey will outsell the candied two or three to one almost anywhere, where there is a chance to make a display. In my own experience the proportion was nearer sixteen to one.

You see along back in the eighties I tried, for comparison, giving the grocers liquid honey in tumblers, and the candied article in the Jones pails with the tin packages all covered with fine lithograph labels. Well, these showy labels were too common, and the "dear public" would hardly notice them; but the liquid honey in glass would at once excite admiration. Then the small tin boxes looked bad, reminding one of ointment or "rat pizen."

To the bee-keeper who wants to rush his honey off the hives as fast as he can, and get it on the market with the least labor, the plan of putting it up candied has much to commend it. He can extract before it is capped; for when candied it will not show how thin it is; and if a little off color or flavor it will not be noticed as quickly. But in my opinion such slipshod methods should not be encouraged, as it is well known that lowering the quality of any commodity will damage the market for all grades. I would suggest to Dr. Miller that this might tend toward "lower prices for us all," and will also offer the following in addition:

Candied honey is a poor seller on account of its unattractive appearance. Few would buy except those who had previously acquired a taste for it. "Well displayed is half sold" is a maxim that any live grocer will indorse. With candied honey it is not possible to meet this requirement. With less sold at retail there will be more left in the producers' or jobbers' hands, which must be sold to manufacturers at a lower price; this would mean lower prices all around.

Then too, by putting up our goods in an unattractive way we should play into the hands of our enemies, the glucose-mixers, who would not be slow to take advantage of our imbecility by making a fine display to captivate the eye of the public.

This point of *making an effective display of our goods we can not afford to ignore* if we would keep abreast of the times. Go into any well-equipped grocery where they have a fine stock and notice how many different lines of goods are displayed in glass. I have just counted twenty different kinds of fruits and vegetables put up in glass jars, and displayed on a large pyramidal stand in one of our groceries. This did not include jellies displayed in glass elsewhere, besides nuts, dried fruits, cakes, confectionery, and, in fact, almost all kinds of groceries were displayed in drawers or boxes with glass fronts, and all kept polished bright so as to attract attention. Even the old cheese-box, covered with wire screen, had to give place to a beautiful natural-wood case in oil finish with two cylindrical glass fronts that revolve on ball bearings whenever opened.

Our grocers say that, a few years ago, hardly any thing was put up in glass.

I agree with Mr. Fred Muth in believing that only a small amount is now sold at retail to what might be if the masses could be made to understand that they could get liquid honey that was pure.

Now I think that, if we ever reach the masses with our product, we should put it on the market so that it will advertise itself; and to do this I would follow nature as closely as practicable by sealing the honey up while warm and liquid; and, as we must use a bottle several hundred times larger than that used by the bees, we should use only thick well-ripened honey weighing 12 pounds to the gallon. I know the bees sometimes seal up thinner honey than this, but the case is somewhat different. I saw some honey in one of our groceries, put up by The A. I. Root Co. It weighs only about 11½ lbs. to the gallon; but, as it is put up liquid, and is of nice flavor, I'll let you off this time. Oh, yes! It is with "no little pleasure" that I count you on my side (see footnote, p. 644).

Say—if you don't stop calling me "the man who sells his honey at double prices" I shall call you the man who sells *hives* at double prices. I think, though, that the finest and best finished article, be it honey or hives, should be recognized as the standard, while the man whose goods bring only half as much might be stigmatized as the man who sells at half price.

Oberlin, Ohio.

[This whole question, when simmered down, stands about this way: The general public are suspicious of candied honey. Now, honey will candy. Considering this fact, Dr. Miller, R. C. Aikin, *et al.*, argue that the public may be and can be educated to the wholesomeness and purity of honey in the solid form; then if perchance the liquid article while in the market or in the home shall turn cloudy or solid, no suspicions will be aroused as to its purity or wholesomeness. In Mr. Aikin's locality, consumers will take the candied honey as quickly as they will that in a liquid form, and pay as much money for it. Why? Because he has *educated* them on that point. You, friend Fowls, have educated your trade to nothing but the very best of liquid extracted. Your practice and belief have almost been forced on you by the fact that your customers will have nothing but ripe thick extracted honey; but methinks you might personally show to some of the consumers that here, for example, is a honey candied solid that is of the same lot as that in the jar, beautifully transparent, and so tempting to the eye. If you went one step further, and said some people like the candied article better, you might be able to get them to buy some of both. If I mistake not, Mr. Aikin started out on this very plan until now a large part of his retail trade not only receives but *expects* candied honey, for they know they can easily reduce it to a liquid condition by following the directions on the pail.

Now about the man who sells at double prices. At the time of making the statement I tried to place emphasis upon the fact that one can, if he has gumption enough, get double price providing he takes pains to sell *ripe thick* honey of first quality and no other. When the consumers learn that Fowls always sells a fine article, and that Jones sells the cheap disagreeable twangy stuff at half of Fowls' price, they will patronize Fowls every time, even though he does ask "double prices." Of course, the phrase sounds bad; but the man who is alive and awake to the opportunity presented, and who puts out a first quality of thick honey, has a right to charge for his honey twice as much, for it is *really* *cheaper* than the honey of the other fellow, who puts out a cheap inferior watery article. Yes, sir; I have great respect for the "double-price" man when he gives me double-price value.—Ed.]

HEADS OF GRAIN FROM DIFFERENT FIELDS

MOVING A WHOLE APIARY A SHORT DISTANCE; A NEW PLAN.

I believe it is generally understood among bee-keepers that it is quite impossible to move bees when they are working, without considerable loss. I moved my apiary the last of May, about half a mile, without the loss of any. This is the way I accomplished it: In the day time I prepared my hives by tacking cleats across the bottom-boards and bodies, and also covers. I removed the oilcloth so the bees could cluster up in the cover (my covers have a three-inch air-space, ventilated). At night I stopped the entrances and put them on the wagon, the box having plenty of straw in the bottom, with boards on top of the straw for hives to stand on. Then I hauled them over and put them down anywhere, and left them until next day, with entrances still closed tight. I left in the old yard two hives, one at either side of the yard, each with a little brood, and a few bees and plenty of combs. Next day I went over and arranged the hives in the places I wished them; then about eleven o'clock went to each hive, thumped it, began removing obstruction at entrance, smoking bees at the same time. I went home to dinner and found a few bees coming back, but not nearly as many as I expected, and they were fast finding the two hives that I had left. I let those two hives stay until the next night, then took them to the cellar and left them two nights and a day; took them to the new yard early in the morning; placed one hive in its proper position, took the combs out that had no bees on, and placed the combs with bees from the other hive in their place. I then closed the hive and went to the old yard to watch for bees. I do not think there were a dozen bees lost in the whole operation.

Kilbourne, Wis. C. H. Pierce.

[I believe your plan will work. In any event it is more feasible to move a whole apiary a short distance than to move one colony to some other portion of the apiary. When all the hives are moved, the bees seem to discover that a most radical change has been made, and it does not take them long to see that they have got to adapt themselves to their new conditions. But I should not be surprised if some of the old bees, after they have been to the field, would forget themselves and make a bee-line for the old home. But perhaps they are not like human "folkses." I should like to hear from others who are in a position to try this plan of moving an apiary a short distance.—Ed.]

ARTIFICIALLY RIPENED HONEY VS. NATURALLY RIPENED.

Mr. E. R. Root:—I notice that you still have in the A B C of Bee Culture that imperfect cut of my old honey-evaporator. For many years it has been laid aside, and I have allowed nature's own plan—the bees—to do the evaporating, as they can do it better and cheaper than I can; and more—the nice lot of beautiful beeswax from the cappings is a source of agreeable profit.

The quality of the honey is most decidedly superior to the artificially evaporated article. All artificial honey-evaporators, where artificial heat is not employed, need very close attention in order to accomplish any good. When the air is thirsty it will take up water out of honey; but when it is pretty well supplied with water, then the honey will take it from the air, and you have gained, and more.

For a good many years I have contended that it is better to allow the bees to finish the honey.

I hope it may be agreeable to you to publish this in Gleanings, and also to discontinue that evaporator cut in your A B C book.

S. T. Pettit.

Aylmer West, Ont., Can., July 25.

[I believe it is generally contended that extracted honey ripened in the hive is superior to that taken from the combs before they are capped, and thickened in evaporating-pans artificially, although I have tasted artificially ripened honey that was quite the equal of that which the bees ripened.—Ed.]

JUDGING OF THE PURITY OF QUEENS; HOW TO GET DRONES OUT OF SEASON.

With a suggestion brought out by a Stray Straw on page 381 I will ask a question concerning the reply to John R. Millard, page 352, on the same subject. You say, Mr. Editor, "In the first place, you can not determine a queen's purity by the markings of her drones." The statement is true; but as you here refer to rearing drones from a virgin queen, I will ask whether one can not be certain of the purity of a virgin, if it is known that her mother is pure. When you have worked the plan there outlined, for securing drones from a choice young queen, until it will work no more, remove the queen with enough bees *to keep her laying*, and a day or two later remove *all brood*, substituting an abundance of drone comb; allow them to be hopelessly queenless two or three days, and feed during the time. Then return the queen or a younger one, without introducing by the caging plan, and see if the drone comb is not filled with eggs first. Of course, the queen must again be removed to secure the development of the drones. This is not a new idea, but no doubt many of your readers are not aware of the fact that, if a young queen be given to a populous colony of hopelessly queenless bees, the first demand is for drone eggs.

I am not in "the extreme south" by a good deal; in fact, I have known the temperature to play around 14° below zero at sunrise for nearly two weeks at a time as an exception, and still we have enjoyed a honey-flow from the first of May until now (May 28) that forced me to have cells built in a triple decker ten-frame hive where no bees or brood had been added, and that by the middle of May.

This is the first season during my experience when I could get more full combs of honey than brood in forming nuclei. Where combs of brood were drawn and empty ones given, they would be filled with honey before the queen could get in her work.

I carefully noted what Mr. Doolittle said a year or more ago about caging the queen for ten days should the cell-builders swarm out, the cells in the lower story to be destroyed at the beginning and expiration of the time. About the 10th of May I deviated from instructions by releasing her a day or two too soon, with the result that they poured out again the same day. I returned them to the lower story, the others being set off until the next day. This reconciled them, as it gave them time to get the queen to laying, and there has been no trouble since.

Creek, N. C. W. H. PRIDGEN.

[Of course, if we know that a virgin's mother is pure we may be equally sure that the virgin and her drones are pure, for this is in accordance with the Dzierzon theory, and with actual practice, if I am not mistaken. With regard to getting drones out of season, we will try your plan, for during the late summer and early fall we never have enough drones, especially from select stock.—ED.]

A ROOT-CELLAR FOR WINTERING BEES.

I want to ask for some information of you in regard to wintering bees. I am just commencing in bee culture, and am somewhat solicitous about wintering, especially in this northern climate. My bees have done finely this summer, and I have 17 fine colonies. I am now anxious about carrying them through the winter. I have a fine root-cellar that is cemented and walled on all sides, and I desire some information whether bees put into this cellar would go through the winter well. It never freezes in the cellar at all, but goes down to 32° and remains there. The matter I think to be feared in wintering bees in the cellar would be dampness, though there would be but little of this, perhaps because there would be no vegetables in the cellar except a few potatoes. Now, what do you think about the bees wintering in this cellar? and if not desirable to winter them there, will you give me some directions as to the best mode of wintering here? J. W. STREVELL.

Miles City, Mont., Sept. 18.

[I see no reason why your cellar would not be all right for wintering those 17 colonies. The matter of dampness would not cut very much of a figure either way; indeed, bees have been wintered in cellars fairly reeking with dampness, and they wintered all right; but, of course, we should prefer to have the cellars dry when possible. For the best results in wintering, the temperature of the cellar should not go much below 40°, nor higher than 50. The closer you can maintain these temperatures the better will be the result. It may be necessary to warm the cellar by means of a lamp or coal-oil stove; but in such cases there should be a stovepipe in connection with the chimney, by means of which the gases of the lamp or stove may be taken off. If the temperature of the cellar goes down to 32, and stays there for only a day or two, it would hardly pay to warm it artificially; but if it goes down to 32, and stays there for days at a time, it might be advisable to use artificial heat.—ED.]

BISULPHIDE OF CARBON — TWO KINDS OF.

Some time ago I saw a query in GLEANINGS, if there were more than one kind of bisulphide of carbon in the market. I understand that you would like to get all the information you can about that drug. Permit me to copy a part of an article written by Dr. Otto Lugger, State entomologist, in *Farm Student's Review*, Minneapolis, Minn. The article was written about gophers and how to eradicate them. He says:

> One of the simplest and probably, on the whole, the most effective and cheapest methods yet devised for destroying these animals is by the use of bisulphide of carbon. This compound, when pure, forms a colorless, mobile liquid having a peculiar odor, and, when taken internally, is a violent poison. As usually obtained it contains impurities in the form of other compounds of sulphur which give it a strong and extremely offensive odor, and when inhaled soon causes death. For the purpose of destroying gophers the crude bisulphide is better and much cheaper than the pure article. Care should be taken in using it, as it is both inflammable and explosive. Its efficacy depends on the fact that its vapor is heavier than air, and, when introduced into burrows, it flows like water into all the recesses. This fact should be borne in mind in using it in sloping ground, as, unless the poison is introduced at the highest opening of the burrow, a certain part of the hole will remain free from it where the animal may take refuge.

As the bisulphide fumes are heavier than air, it is self-evident that, in fumigating combs, it is better to place it above, so the vapor can descend, than to place it under the combs, as by the method described by J. A. Golden in No. 17 of GLEANINGS. K. O. SOLBERG.

Kenyon, Minn., Sept. 11.

SHALLOW BROOD-CHAMBERS FOR THE PRODUCTION OF COMB HONEY.

I have just been reading Harry Lathrop's plan for getting comb honey, as described in Sept. 1st GLEANINGS, and will say I have been practicing the same thing here for the last nine or ten years, with Mr. Heddon's hive, and one I make. The latter is a 7-inch hive. Once in a while I find a swarm that does not like to work through the zinc honey-board. WM. CRAIG.

Luce, Mich.

Our bees averaged 62 lbs., and are starting on fall flowers now.

DELBERT E. LHOMMEDIEU.

Colo, Story Co., Iowa.

SHORT-TUBE RED CLOVERS; WHY THEY BACKSLIDE.

Darwin, in his "Variations of Animals and Plants under Domestication," says that "the progeny of the first cross always reverts to one or the other of the original ancestors." In my opinion (mind, I don't make the assertion, but simply give my opinion), the cause of so much of Mr. Hasty's clover reverting or backsliding, as you call it, was due to cross-fertilizing by the bees. You see that will be something that will have to be encountered whenever the seed is sown near other red clover. In breeding a great variety of thoroughbred fowls during a period extending over 40 years, so far as my experience goes Darwin is right. Take, for instance, the Plymouth Rock fowl, which was made by crossing a Dominique cock with a Black Java hen. Now, if you cross the Plymouth Rock with a Brahma or Leghorn, or any pure-bred fowl, a very large percentage of the chickens bred from this cross will revert or breed back to the Black Java or the ancestors of the Plymouth Rock, and some will show the plumage of the *Gallus Bankiva*, or wild-jungle fowl of India, which is the original ancestor of all our domestic fowls, *i. e.*, chickens. It took Sir John Seabright forty years to perfect the "Seabright bantam." He conceived the idea of producing a breed of bantams with the marking or lacing of the Polish fowl. He started with a small yellow or Nankin bantam and a Polish fowl. He had to reduce the size of the Polish bird nearly two-thirds (of course I refer to the progeny), get rid of its crest, or topknot, and beard, and at the same time preserve or perpetuate its lacing or marking upon the diminutive bantam. Now, if we could only control the mating of our queens as we can that of our horses, cattle, sheep, swine, and poultry, I firmly believe that the breeding of bees with longer tongues or any other desirable quality would soon be accomplished.

Ashbourne, Pa. W. E. FLOWER.

THE MEAT DIET, AND THE USE OF SUGAR.

You speak of meat diet, and I am pleased to say that, if I took GLEANINGS for a hundred years, and paid you $1.00 a year for it, and never read it, I would still owe you a debt of gratitude for the mention you made some years ago of the treatment by Dr. J. M. Lewis, Rose Building, Prospect Street, Cleveland, Ohio. I was then pretty well run down in health, and I know some of my friends did not give me very much longer in this world. For several years at the close of the honey season I was sick. As a result of your advice I took treatment from Dr. Lewis. Not only did he leave me in better health than I had ever been, but I learned from him rules in connection with food, etc., for which I shall be grateful as long as I am in the scene here below. I believe there is nothing like meat diet and the hot water between meals; and after the system gets into good condition I have no doubt simple vegetable foods will answer. In beans we have the same components as lean meat. Doubtless the reason why many can not digest meat and beans is because they eat too many other things with them, and their system would first have to be brought under skillful treatment into a condition to digest and assimilate such food. You can have some idea of the way in which I have gained strength through Dr. Lewis' treatment when I tell you in preaching last winter in the lumber-camps my average walking was more than 15 miles a day, and several times I walked 25 to 29 miles in a day, or even without a stopping-place between; and I made, by walking and running, the 29 miles in exactly 7¼ hours, preaching, besides, every evening. I can indorse all you say about sugar, and more. We soon get accustomed to not using it, and will enjoy our food even more without it.

Our Homes for April 1st was to me particularly profitable. How sad it is that salvation and healing of the soul can be had "without money and without price," by simply accepting Christ, a "free gift," and yet people refuse this, and hundreds of thousands can be duped into paying $5.00 to some humbug. The welfare of the body is, after all, nothing compared with the soul. May you have wisdom from on high to use your influence in GLEANINGS for the Master.

Leith, Ont. R. F. HOLTERMANN.

[Yes, the meat diet is all right, and so is Dr. Lewis; but a great many who have tried the treatment have attempted to do it alone, without proper advice. When a patient is too sick or too far away to get to him, Dr. Lewis can give treatment through correspondence; but of course he prefers to see the person. He has hundreds of grateful patients who have recovered from their old maladies, among whom may be named A. I. Root, E. R. Root, Mrs. J. T. Calvert, and our friend above, R. F. Holtermann. I could name dozens of others, but they are unknown to the bee-keeping fraternity.—ED.]

CHOCOLATE ROLLS AND HONEY.

I have just returned from a European trip of three months. While it no doubt is not news to you, it was to me that the staple and universal breakfast meal throughout the Continent, with no exception, from Holland to Belgium, France, Switzerland, Italy, Austria, Germany, and even in the hotels of London, consisted of the regular breakfast of chocolate, coffee, rolls, and honey. Sometimes a marmalade would be substituted for honey. No meat is ever served for breakfast unless specially ordered.

With this breakfast our party, consisting of 44 people, thrived exceedingly, doing steady hard work traveling for three months, no one missing a meal, which seemed to me remarkable, as it convinced me that there must be more nourishment in honey than is commonly supposed. It was all extracted honey, and most of it would not compare favorably with our Northern State production in flavor, etc. The consumption of extracted honey must be very great there. I saw no comb honey.

H. R. WRIGHT.

Albany, N. Y., Sept. 20.

RABBITS IN THE BEE-YARD TO KEEP DOWN WEEDS.

In answer to Mr. H. D. Burrell, p. 735, I will say that we kept from ten to forty hares, or rabbits, in our bee-yard for several years. The yard was 50×80 feet, and contained about 100 colonies of bees. The rabbits were confined by means of poultry-netting, and a plank ten inches wide was sunk edgewise in the ground to prevent burrowing out. We found the rabbits seldom disturbed by the bees, and the bees not disturbed by the rabbits.

Occasionally, when working with the bees a colony would become "riled;" a bee would try to burrow in the soft fur of a rabbit, which Mr. Rabbit could not endure. A few buck-jumps, a kick, a double summersault, a roll over on the ground, and if the bee was not gone, Bunnie dear would quickly pick the bee out with his teeth, and at once flee to his burrow. The bees seemed to become accustomed to having the rabbits around; and as the hives were raised several inches from the ground it was under these they found a favorite resort. We found the rabbits just the thing to keep down vegetation. They would greedily eat all obnoxious weeds. They were rodents true to their instincts, and would sometimes burrow 20 to 30 feet under ground. Our rabbits were of good size, and comprised every color imaginable in rabbits. My stock was bought of Mr. A. L. Boyden, of Saline, Mich., but now of The A. I. Root Co. W. H. LAWS.

Round Rock, Texas, Sept. 22.

FINDING QUEENS—HARD CASES.

J. A. Green's method of straining out queens, page 728, is all right in principle, but I prefer using an empty hive and honey-board. Place the empty hive on the stand where your bees are; put one or two combs of brood in an empty hive; put on a wood-bound honey-board; remove the bottom-board from your colony of bees, and place them on top of your empty hive. Take out the combs and brush off the bees, and you will be sure to find the queen on the honey-board. Of course, this plan is too much trouble to use except in extreme cases. I had one colony last year whose queen beat me, even with the above process. She would fly off and come back and hide among the bees, and the bees would run all over the hive and out in the grass, anywhere and everywhere. I tried at least half a dozen times to catch her before I succeeded; but when I did I pinched her head off.

Another plan I have used with the Simplicity hive is to smoke the bees at the entrance until the hollow space in the lid is filled with bees, which will take about one or two minutes. Take off the lid, and shake the bees a few at a time in front of the hive, and about nine times out of ten you will find the queen. I find this about as good a plan with black bees as I ever tried, and I have tried nearly all of them. J. M. CUTTS.

Montgomery, Ala., Sept. 21.

[This plan will probably work; but, very fortunately, in the case of Italians at least, it is seldom necessary to resort to so much trouble, and that is one reason why I would not have a black bee in the yard. They are cross, strongly inclined to rob, and their queens—well, it takes an expert to find them unless he takes some such method as that described by Mr. Green or Mr. Cutts.—ED.]

Our crop of honey amounts to nothing. Something seemed to blight the bloom; but I do not think we shall ever get such crops as we used to—too crowded with bees. We have 2500 stands within ten miles, up and down the lakes. S. S. ALDERMAN.

Wewahitchka, West Florida.

EDITORIAL BY E. R. ROOT

MR. W. Z. HUTCHINSON, editor of the *Review*, Flint, Mich., took a picture of the members of the Chicago convention at the close of one of the sessions. For a group view it is exceptionally good, and he offers to furnish it to bee-keepers who desire it, at 75 cents postpaid. The picture will be sent on approval, and, if satisfactory, the amount can be remitted or the picture returned.

BEES, BIRDS, AND GRAPES.

THIS is the season of the year when we may begin to hear complaints of bees puncturing grapes. "Why," say the complainants, "our grapes are fairly covered with bees; and do you mean to say that your bees do not puncture those grapes? Why, I can show you that they are running their bills away down into the pulp of the berries." Until within a year or so we were not able to meet successfully this sort of talk; but now we have learned that a little bird called the Cape May warbler, with a very sharp long beak, during the early morning, when most folks are not around, will run its beak into grape after grape, making the whole bunch look as if it had been riddled by fine shot. They are quick of flight, and rapid in their work. They will alight on the vine, look this way and that, and then go into the business of puncturing in a wholesale way, which they do most successfully. As these birds are rarely if ever seen by human beings, on the vines, and as the bees come in an hour or two later to complete the work of destruction by running their tongues down into the hole made by the bird a few hours before, the innocent bees are blamed for the whole work.

The facts are, the grapes were ruined by the birds, and the bees only help themselves to fruit ruined and otherwise useless.

The other morning, as we sat eating breakfast, we watched from the window one of these so-called "warblers" get in some of its dirty work. Yes, we "caught him in the very act." Later in the day the bees began their visitations, and ordinarily would have been blamed for something for which they were entirely innocent.

Another grape-puncturing bird is the Baltimore oriole, a bird of brilliant plumage. Sparrows are accused of entering into this disreputable business; but from what observation I have made, I am satisfied they are after the little spiders that are found in many bunches of grapes. I have watched the sparrows very carefully, and have seen them get the spiders, but I have never found them puncturing the skin of a grape. Indeed, their beak is not shaped right for the work.

A CHEAP BEE-FEEDER.

A NOVEL suggestion is given out by a correspondent (Mr. Kernan) of the *American Bee Journal*. It is to the effect that ordinary paper bags can be used as feeders for giving syrup to bees. He takes ordinary sacks, such as can be obtained at groceries, pours syrup into them, sets them on top of the frames, in a cap or upper story, pricks a few holes in the side of the bag, and then invites the bees to help themselves. There is no doubt at all that the paper will hold the syrup, and that as fast as the syrup exudes through the pinholes the bees will take it up. In the absence of feeders one can use the paper sacks very well, I should judge, and then he would have the satisfaction of knowing that, when through feeding, he could burn his sacks up.

Mr. Kernan thinks that some of his bees were poisoned* by the printing-ink on the side of the sack. I can not think that that had any thing to do with it — that the dead bees, if any, were robbers that had stolen their way through the entrance, and, on being discovered, were killed by the inmates of the hive. During robbing time, robbers are quite apt to work themselves through the entrances of fed colonies, and be found in and about any kind of feeder, dead, whether there is printing ink about it or not; but the idea of using paper sacks is quite ingenious, and I see no reason why it would not work very nicely.

THE TEXAS DISASTER AND THE BEE-KEEPERS WHO SUFFERED FROM IT.

WE wrote to a few of our bee-keeping friends whom we thought might be in the track of that terrible Texas tornado and flood; and so far the only real sufferer is our old friend W. O. Victor, of Wharton. O. P. Hyde & Son, at Hutto, write that the storm did but little damage to them. The Jennie Atchley Co. state that, while they were on the edge of the terrible storm track, they are safe; that they have been trying to relieve friends and bee-keepers who lost all they had, including bees, hives, and all other property. Mr. W. H. Laws, of Round Rock, has also suffered to some extent. Mr. Victor, unfortunately, only eighty miles from Galveston in a northwesterly line, has suffered almost as much as some of the people in the ill-fated city. The year 1900 has been a peculiarly hard one on him. In April he was visited by a flood occasioned by the overflow of the Colorado River, and he was compelled to scaffold, or, rather, to put his hives on stilts, in order that they might be kept out of the water; and all during the summer he was compelled to wade in mud and water in order to get any thing done; so that, taking it all in all, he was ill prepared for the next disaster. In the Galveston tornado he had about 200 colonies blown over and scattered broadcast over the yard, and about half of his nuclei in his queen-rearing yards were wrecked. He says if he had dumped them out of a running wagon with a scoop they could not have been more disarranged. On Sunday, the 9th, as soon as he could get out, and found he could stand the storm, he set to work to put things to rights. He had enough bees in most hives to make pretty good nuclei; and as he had plenty of cells with which he intended to requeen his outapiaries he did not lose as much as he thought at first. His out-yards were not damaged to so great an extent, as they were in the timber. But the trees were blown all over the yard, and the hives could hardly be seen for the underbrush and uprooted trees. Fortunately, only one hive was entirely crushed. His residence is not demolished, but severely racked. His bee-supply house is totally demolished, and his supplies more or less damaged.

Mr. Victor does not ask for charity; but as he has a splendid lot of nuclei and a select stock of bees, he does ask the generous-hearted bee-keepers of the land to give him a lift by sending him orders for bees and queens. His honey season was short, and therefore he is obliged to depend almost entirely on his queen-rearing to make another start. He has a large number of colonies and nuclei, and he says we need not be afraid but he can take care of any number of orders. He has the reputation of being prompt, and his stock good; and if our friends can not send him orders for queens now, if they will remember to send to him early next spring they will be doing him a great favor, for he can fill orders for queens every month in the year, being located in the almost extreme southern portion of Texas.

FEEDING BEES MEDICATED SYRUP FOR THE PREVENTION OF DISEASE; HOW TO DO IT.

IN many localities, especially in New York, Michigan, Colorado, Wisconsin, Ontario, and other localities more or less subject to black brood, foul brood, and pickled brood, it certainly would be advisable, if the bees require feeding at all, to medicate all syrup fed, with some antiseptic of recognized value.

Let it be understood that germicides, when introduced into the food, in a quantity sufficiently diluted to be harmless to the bees and to the brood, will not kill the *spores* of either black or foul brood; but they will kill the *bacilli*, or living germs, that have developed from the spores, or, as we might say, from the eggs of the microbes. The only thing we can hope to accomplish by introducing the medicated feed to the bees direct is to kill the bacilli as fast as they develop from the spore state. The active principle of the disease in the spore is protected by a cyst, or thick coating, which, I have shown, will successfully resist the action of boiling water for an hour or an hour and a half at a time. This same coating will also resist the action of drugs when given to the bees at the proper dilution.

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* Printing-ink is not poisonous to human beings, and can not be to bees.

There are hundreds of bee-keepers located in vicinities where black and foul brood have been raging; and I would by all means urge all such to medicate all the syrup they feed, either with carbolic acid or beta naphthol, a new drug that is decidedly less objectionable to the bees than the other, and quite as destructive to the active bacilli themselves.

This same drug is recommended by bee-keepers in England, and especially by Thos. Wm. Cowan, editor of the *British Bee Journal.* It comes in a kind of powder, in one-ounce boxes. Into an eight-ounce (or half-pint) bottle empty one of these ounce packages. Then pour in just enough wood alcohol to dissolve the powder; then fill the bottle full, or very nearly so. This quantity of chemical in solution is just right for 140 lbs. of sugar undissolved. Measure off 140 lbs. of sugar, and then 140 lbs. of water, and mix. Pour the contents of this eight-ounce bottle into the syrup, and stir well. We make all our syrup by mixing sugar and *cold* water, equal proportion, in the extractor; that is to say, after the two are placed in the machine we turn the reel vigorously for a few minutes. The next move is to pour in the requisite quantity of the drug in solution, and turn the reel again till the ingredients are thoroughly mixed. If one wishes to feed a less quantity he can figure out for himself just what the proportions will be.

Mr. Cowan, just referred to above, says that beta naphthol has been thoroughly tested in England, and its efficacy proved, and that it is now the common practice of the most advanced bee-keepers in that country to medicate all their syrup before giving it to the bees. We are medicating all the syrup fed to our bees this fall, with the naphthol solution. We are doing it as a matter of safety; for no one knows in these days when one of the dread diseases may visit his apiary.

Beta naphthol can be obtained at most drugstores; but when one can not get it in his locality we will furnish it. See Special Notices.

Carbolic-acid crystals can be furnished at the drugstores in pound bottles for about 75 cts.; but on account of a very decided repugnance for it on the part of the bees, the beta naphthol should be used.

We have been trying the carbolic-syrup mixture in the proportion recommended by Cheshire, but our bees positively refuse to take it. They will go to the feeder and smell of it, and then turn away in disgust. We have even reduced the quantity of the acid, but that seems to make but little difference; and I conclude, therefore, that bee-keepers had better not waste their time with it. I remember when we used to spray with a solution of carbolic acid and water, when we had foul brood, the odor would sometimes drive the bees clear out of the hive.

But it must be distinctly understood that neither carbolic-acid nor beta-naphthol syrups will cure a case of foul brood after it is well started. I would waste no time in spraying-solutions of either in water on foul-broody combs. They are valuable only as preventives—that is, to catch the disease at the start. A pail of water at the beginning may put out what would otherwise be a million-dollar fire, when it would be worthless after it had got well going.

WINTERING IN THE SOUTH.

A SHORT time ago a subscriber wrote, asking why there was nothing in the columns of GLEANINGS or any other bee-journal on this subject. He had, he said, read a great deal about wintering that did not apply to his locality. He was a beginner, and desired to get information. It is true, there has been nothing on the subject of wintering in the Southern States particularly, because for that portion of the country there is no "wintering problem," and it almost seems as if there were nothing to be said on the subject; but for the benefit of our correspondent and others I will give what I believe to be the common practices of bee-keepers in the sunny Southland.

Where bees can fly almost every day in the year, and for ten months in the year can gather a little honey or pollen, outdoor wintering in single-walled hives is recommended. Double-walled hives would do no harm, and might, during the coldest of the weather, save a little brood; but it is doubtful whether the added expense for the extra walls and packing will compensate for the possible slight loss of brood and bees during a few cold days. While I would recommend single-walled hives for the southern portions of our country, and for some parts of the West, I would always urge that the same be located in an inclosure of trees—a tight high board fence, a hedge fence, or any thing in the way of buildings that will afford a windbreak against the prevailing winds. The establishing of windbreaks is one of the most important requisites in either the northern or southern portion of the country.

While it is no great trick to winter bees in such localities as are found in Florida, South Carolina, Texas, Louisiana, Georgia, Alabama, South Carolina, yet one must be careful to see that his bees do not run out of stores, as it seems to be a generally acknowledged fact that bees wintered in the South consume a much larger percentage of stores, according to the size of the colony, than those in the North. Those in cold climates are compelled to contract into a very small ball for the purpose of concentrating the animal heat; and while in that condition they go into a sort of semi-dormant state, during which they consume a comparatively small quantity of food. On the other hand, bees in the South, especially in the warmest portions, will have access to all parts of the hive, will be rearing more or less brood, and, as a consequence, when natural flora does not secrete nectar they will be liable to run short of stores, and starve. To the southlander let me urge that the greatest danger is starvation; and the next greater is more or less of robbing during a dearth of honey. Indeed, all things considered, I believe that the Southern bees require more watching than those of the North.

In localities like Virginia, Tennessee, and other States lying in about the same latitude, it might be advisable to use double-walled hives; but we do know that the majority of bee-keepers in that latitude winter their bees successfully in single-walled hives; but I believe it is the general practice to place on top of the hive a super containing chaff, leaves, planer-shavings, or some good warm packing-material; then if the colony is not very strong it is advisable to place a chaff division-board on each side of the cluster. In all cases the bees should not be given a larger cubic capacity than they can comfortably fill with bees spread out as they usually are on a day when the temperature is not below 70 F.

In Colorado it is customary to winter in single-walled hives. A shallow cap or tray containing an inch or so of packing is placed on top of the hive. Very often, for further protection, a sort of shed or roof, as shown in our issue for July 15, this year, with its back to the prevailing winds, is built over a row of hives. The Colorado bee-keepers are troubled some with sandstorms, and with fierce piercing winds; and while the temperature may go down below zero, it is not likely to remain so for more than a few hours, when one extreme will be changed for a temperature of 60 or 70 F., and the bees flying. For such conditions double-walled hives, and an excess of packing-material has been found to be not at all necessary in Colorado.

UTTER VERSUS UTTER; THE BEE-KEEPING INTERESTS OF NEW YORK THREATENED.

For the last week or ten days clipping after clipping relative to a celebrated bee-suit in New York resulting in a verdict against the bee-keeper and in favor of the fruit-grower has been sent in to us, asking what we or the National Bee-keepers' Association was going to do about it. The case was promptly referred to General Manager Secor, who, it appears, had already taken the initiative by authorizing an appeal, and pledging $100 toward securing a reversal of the judgment of the lower court.

Mr. Secor explains his own action as follows:

> Wide notoriety has been given through the daily and weekly press to a lawsuit between two brothers near Amity, N. Y., one a bee-keeper and the other a peach-grower. The fruit-grower alleged that the bees belonging to his brother, the bee-keeper, destroyed or lessened his crop of peaches. The case seems to have been one growing out of former family feuds, and was, therefore, fought bitterly, but not thoroughly. While the public has no interest in family or neighborhood quarrels, the bee-keeping fraternity does have an interest in truth and justice. The case was tried before a justice of the peace, and from reports of the evidence presented by defendant the bees were fairly exonerated; but the court decided against the bee-keeper, and rendered judgment for $25.00 and costs.
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> Notice of this suit came to me, as General Manager, but too late to get in the proper evidence to rebut the allegations of the plaintiff. Therefore I have authorized an appeal to the County Court, and have pledged one hundred dollars toward fighting it. The defendant is a poor man, which may have had something to do with the failure in the lower court, as he could not afford to employ the best legal counsel, or procure the attendance of expert witnesses from any distance.
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> I am assisting the attorneys in obtaining evidence, and hope to get a reversal of the lower court. I merely want to let the bee-keepers know that the National Association is not dead or asleep. The Association can not afford to let such a decision stand, and will fight it the bitter end, if I have any authority in the matter. EUGENE SECOR.
>
> Forest City, Iowa, Sept. 17.

I believe every bee-keeper in the land, especially the members of the Association, will commend the action of the General Manager; for this is one of the most important cases that was ever brought before it, and it is very essential that the verdict of the lower court, so inimical to the interests of bee-keepers, should not be affirmed by the higher court. We had considerable correspondence with Mr. Secor, and know he has taken a very active interest in the case, and will see that expert witnesses are furnished whenever they may be needed. A. I. Root himself has offered to pay his own expenses, and testify for Mr. Utter the bee-keeper, should his services be desired; and I doubt not that other bee-keepers will be glad to respond in like manner. In New York there are two directors of the Association in the persons of Mr. W. F. Marks, of Chapinville, and Mr. P. H. Elwood, of Starkville. Both of these gentlemen will be able to render expert testimony. Mr. Marks is a fruit-grower as well as a bee-keeper, and Mr. Elwood is one of the best-informed bee-men in the State.

The bee-keeping interests of New York are very extensive; and if an adverse decision should come from the higher court, it might mean the wiping-out of the industry in many important sections, and seriously handicapping it in others.

It is unfortunate that this case should arise out of what was probably an old feud, and from spitework. The fruit-grower, if I understand the case, is much better fixed financially than his brother the bee-keeper; and it goes without saying that he will undoubtedly fight his side of the case to the bitter end. It is not a question, apparently, whether the bees are a nuisance, but whether one brother will be able to "get even" with the other. If this is the case, then I see no reason why the bees should not be exonerated from all blame, for from the newspaper reports there was no real testimony offered proving that the bees did puncture the fruit or "sting the trees." If given a fair chance we can easily show the absurdity of both propositions.

To show how the general press of the country regard the decision of the judge (or justice) who decided against the bees and the possible consequence of that decision upon the bee-keeping industry, I give here just one sample from the *Lewiston Journal*, Maine. It reads:

> A WONDERFUL DECISION.
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> A New York judge has delivered a decision that renders the owners of bees liable for damages for trespass on the property of other people. This is a case of justice run mad. Should it be sustained in the higher courts and extended to other States it would simply kill the bee industry. We can control our cattle and sheep but we can not control the flight of bees. It is clearly evident that the fools are not all confined to the common classes. When judges get to rendering such decisions as this it is high time for them to step down and out, so as to make room for some one possessed of common sense.

OUR HOMES,

BY A. I. ROOT.

Righteousness exalteth a nation; but sin is a reproach to any people.—PROV. 14:34.

A subscriber sends me a newspaper clipping containing Gen. Corbin's defense of the army-canteen system, and suggests that I use it for Our Homes. I shall not take space to give Corbin's letter here,for I suppose most of you have seen it, or heard more or less in regard to it. The circumstances, as I take it, are as follows:

Our administration decided, some little time ago, that it was not best to let the majority rule, especially in regard to temperance matters. The temperance and Christian people worked hard to get a law banishing the canteen from the army. Everybody understood that law—the whisky people most certainly, or they would not have worked as hard as they did to defeat it. In spite of all they could do, the Christian people, the temperance people, and the good people generally, outnumbered them. They gave up, and admitted they were defeated. After thinking the matter over quite a while, however, in their desperation (at least it seems so to me) they got Attorney-General Griggs to make his famous decision (or "*infamous,*" as the Chicago *Advance* calls it). The Griggs decision, however, could not have stood a moment against the indignant protests of those who worked so hard for the law, and fairly secured it, had not President McKinley indorsed Griggs. The whisky element evidently expected we would give up and drop it there. But it has not been dropped; and, God helping us, it never will be dropped. Our administration has been so worried that it evidently felt something had to be done; therefore we have had letters and speeches in favor of the army canteen as it is. Of course, the rum power has done every thing that could be done to get influential men, and those who stood high, to help it out of its shameful predicament. As soon as I read the Corbin decision I was satisfied at once it was a skillfully gotten-up affair managed to pacify the churches and law-abiding citizens in general. To show you that it is such, permit me to quote from the *Christian Endeavor World.* Surely no one will attempt to say that this periodical is a political organ:

> We are glad to note that the War Department has thought best, in the person of General Corbin, to issue a defense of liquor-selling in the canteens. Of course, we should infinitely prefer a condemnation of it; but since that is not to be expected, the next best thing is that the temperance sentiment of the country should have put the department on the defensive. The reference, in General Corbin's letter, to the "unwarranted anxiety of temperance people about the army," shows what has stimulated this official utterance, and the appearance of the defense at the opening of the presidential campaign is decidedly timely.
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> General Corbin's desire to uphold regimental saloons has led him into statements that are positively ridiculous, and that go far, in themselves, to offset his argument. For instance, he soberly claims the army to be "a model temperance society, a practical one, one where reasonable abstinence is the rule and where excesses are the exception; a society whose precepts, no less than its example, could be followed by all people in safety and sobriety." "The army of to-day," he declares, "in comparison with all other citizens, is the most abstemious body in our own country."
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> To support these startling propositions General Corbin states that, since the canteen was established, the health of the men has improved, the number of trials by courts-martial and the number of desertions have decreased, the savings-bank deposits have increased, 1019 commissioned officers have reported that the canteen is "an effective temperance measure," and the average expenditure for beer is only twenty cents a month.
>
> The most plausible of the general's arguments are based on a misstatement of the temperance position. We object to no feature of the canteen but the liquor-selling. The arrangement for games, for letters home, for reading, for co-operative store-keeping, we commend most heartily. We believe they have been productive of all the good that General Corbin claims for the institution as a whole. We believe that if liquor-selling should be eliminated from the army canteen, as the naval authorities have with energetic conviction eliminated it from the canteen of the navy, far greater improvement in our army could be recorded. We believe that the official sale of any liquor on which men can get drunk, and the detailing of soldiers to act as saloon-keepers, is entirely harmful. With no purpose of defaming our soldier boys—and they *are* mere boys, most of them—but with the most profound reverence for their bravery and patriotism, we have, nevertheless, abundant evidence that the agitation for the removal of this great temptation is far from unnecessary. Calling the army "a model temperance society" is a bold but scarcely a convincing expedient.

Now, there is another point to this matter, and to me the most painful (I think I might as well say *shameful*) one. The question before us is not whether the liquor-selling canteen is a good thing or a bad thing. *That* part has been settled. It has been voted out of the army as fairly and squarely as could be, for Congress passed a law abolishing the canteen from the army. The President and Attorney-General Griggs know this, certainly, as well as anybody else. The only question to be discussed at the present crisis is, Shall the majority be permitted to rule? or, in other words, shall our laws be enforced after they have been honestly secured? The administration has, without question, decided that it is not best to let the majority rule, on the ground that the voters of the United States are not, as a whole, wise; that they are not capable of grasping these great problems; that it would not be best to permit them to have their way about the liquor-trade, even if they were in the majority. Let us suppose for a minute that this is true, and that there are times when our chief officers know better what is best for the people than the people do themselves. The next question is, "When the people are too ignorant or too narrow-minded to decide what is best, who shall stand over all and above all, and decide?" We profess to be a Christian nation. It says on our coins, "In God we trust;" but it is not God who is ruling when the people are incapable. It is the whisky power. Hanna said recently here in Ohio, "There must be no temperance legislation in Ohio this year"—that is, just before election. Foraker owned up, when he was pressed so he could not help owning up, that he had said it would not be best to let Ohio have the local-option law. In his opinion it would not be best to let the people of Ohio decide whether they should have liquor-selling right around their homes or not. He said in substance, No matter how strongly the majority of the people object to liquor-selling right around their homes, it is not best to let them have their own way about it. He did not say, but I shall take the liberty of saying for him, that it would be best to let the brewers plant saloons anywhere they wanted to, no matter what the majority of the resident people thought about it; and the brewers are already saying to themselves, at least I judge they are, "Help yourselves if you can."

The Chicago *Advance* is a very wise, careful paper—in fact, I think it is a little *too* careful about criticising the present administration. Here is their version of the matter we have been talking about:

> And what of the President's consent to the annulment of the anti-canteen law? asks a correspondent. It is one of the most serious mistakes of a good administration. The most vulnerable point of McKinley's administration is not Imperialism, so-called, which is good or bad according to the construction put on it, but that he assented to the astonishing decision of his Attorney-General which turned a prohibitory law into a permissive law. We do not call him a "vile hypocrite," as does an indignant correspondent, for we know that many men in army circles favor the canteen as the best method of mitigating the evil of drunkenness in the army. In this matter the President probably followed his favorite method: to learn what is the prevailing trend of public sentiment, and decide accordingly. The trouble is that he tried to ascertain the trend of public sentiment from a partial public, from army circles and the Cabinet; for if he had canvassed the Methodist Church and the other religious bodies of the United States, he might have concluded that his Attorney-General had not been able to think straight when he gave his famous, or infamous, decision as to the meaning of the anti-canteen law. It is true, and "pity 'tis 'tis true," that neither in the army, nor in society as a whole, is public sentiment predominantly in favor of the entire prohibition of the liquor-traffic.

I have just one more point to consider. When the President failed to make any reply to the temperance people, although month after month passed by, a delegation of women visited him. I do not know whether they demanded an audience or not; but they certainly were some of the best women of our land. He granted the audience. He listened to all they had to say, but courteously informed them the Griggs decision would have to stand. He was really crowded into a close corner. He was obliged to say something in defense of himself and Griggs. As there was no other alternative, and as he was determined to defend Griggs, he said with Griggs, or at least said in substance, the law was not plain — intimating that neither he nor Griggs understood what the temperance people wanted. He said if they would get a law passed that was plain and clear he would see that it was enforced. Now, I think I am safe in saying that there is scarcely a man or woman in the United States who believes anybody did not understand that the people who worked so hard for that law did not mean that it should get rid of the canteen *entirely*. The *Advance* and other Christian papers say it is "too bad," and let it drop there. All our Presidents, from George Washington down, have been, as a rule, able and honest men. The father of our country set a good example to start with; and in all the records of the lives of our Presidents, and in the history of our laws down from that time to this, there has never been a case before, I believe, where the very *intent* of a good law has been so completely nullified as was the anti-canteen law by the present administration. I do not believe much in the policy of abusing our Presidents, much less President McKinley. In the main he has given us a wise administration; but in the matter of this temperance legislation I can not help feeling that he has yielded to the pressure of the bosses instead of following the dictates of his own good judgment.

May God help us; may he give us wisdom; may he help us as a people to be as wise as serpents and as harmless as doves. May he give us grace and strength to do our duty in spite of the liquor-traffic, or in spite of Satan in any other guise or form with all the followers he can scrape up and bring forward, even though he rake and scrape to the very depths of the bottomless pit.

DO RAILROAD COMPANIES HAVE SOULS?

We have been so often assured they have neither souls nor consciences I take pleasure in speaking a kind word for at least one railroad company. During my trip to Canada, while the train stopped at Niagara Falls I amused myself by reading a great placard that said, "To-day you can go to Toronto and back for only $1.00." A little further on I had to change cars at Suspension Bridge. The conductor said we should have to wait about twenty minutes. After that time a train came up, and everybody rushed to get on in order to secure a seat. I asked one person if that was the Toronto train, and he said it was. Then I asked another person if that was the only train going to Toronto just then. He said it was the only train. I thought the cars looked a little shabby for regular first-class passage, and when the conductor came around he told me I had made a mistake, and got on the excursion train—that my ticket was "no good;" but as they advertised to Toronto and return for only $1.00, I thought perhaps I should not be very much out of pocket to pay my fare only one way; but I had to pay 20 cents car fare and $1.25 on the steamer. The purser said he could not make it any less, even though I could have had the whole round trip for only $1.00 at Niagara Falls. I thought I had read in some railroad company's folder that if, for any reason, we were unable to use any portion of a ticket, if said ticket were returned to the place of purchase a reasonable amount would be paid back. When I reached home here in Medina I made a statement of the matter, and gave the unused part of my ticket to our agent. In due course of time I had one of my pleasant surprises in the shape of $1.25 from the Grand Trunk Railway. Almost everybody on that steamer paid really less than 50 cents for passage; yet because I was unable, under the circumstances, to get to Toronto on time unless I paid the *regular* fare, $1.25, the Grand Trunk Railway Co. made good the $1.25. Well, I should have enjoyed that steamer ride across Lake Ontario quite a little more had I *known* I was going to get my $1.25 back again. It does me lots of good to think that a great railway system is in the habit of protecting stupid and blundering travelers in that way.

AN INSTANCE OF THE WONDERFUL INTELLIGENCE AND ALMOST REASONING POWER OF THE HONEY-BEE.

On the 12th of September a shipment of honey came in, and two 60-pound cans had been damaged so that the contents had leaked out and run through the floor of the box car. The railroad company had agreed to take the car away at half-past ten ; and as the weather was cool the bees had not discovered it at that time. Unfortunately the company failed to move the car as agreed, and I knew nothing of it till I was apprised something was wrong by the unusual number of bees swarming around the windows and doors of the factory. Then I made a little row in the camp. We carried a hose over to the leaky car and washed away the honey, cleaning it from the gearing, ironwork, and underside of the car until the bees were pretty well satisfied there was nothing more to get, although they were hanging around in great numbers. To prevent the bees from getting the honey inside the car, our boys covered the floor pretty well with sawdust. About three o'clock the engine came around and pulled the car away. A little after four, some men who were loading wheat informed us our bees were making them a great deal of trouble. I at once jumped to the conclusion that the company, instead of taking the car entirely away, as agreed, had only removed it to another location in the yard, and that the sticky car was still enticing our bees. I went over, saw the sawdust on the floor on which they were dumping bags of wheat, and concluded it was the honey-car ; but while I was puzzling my head to account for the fact that the ironwork under this car showed no trace of honey or water either, a man called to me and pointed to *another* car in still another location, just swarming with bees around its door, inside and out. Then I "caught on." Do you see the point, friends? There was not a particle of honey in or around either of the two cars I was looking at. After the honey-car had been pulled clear out of town, the bees, not willing to give up, proceeded to "leave no stone unturned," and were investigating every car having an open door that, in their judgment, *might* be the one that had been pulled away. When they found one with sawdust spread over the floor they naturally concluded *that* was the car, and got down on their hands and knees (figuratively) searching in the sawdust for the honey. The other bees, seeing them thus employed, naturally concluded this was the place. Others, having learned that one box car contained so rich a find, concluded that a search through all the cars in the yard might possibly reward them for their investigation ; and it was only in the cool of the evening that they were willing to stop digging in that sawdust, and be *convinced* there were no more honey-cars in the neighborhood.

Now, friends, it may not be true that bees recognize colors, but they certainly do take in the general makeup of objects. They are not only able to recognize a hive, but they know a box car at sight ; and even if you move it to a different location they take in its general appearance so that they know pretty well how to find it in case of removal. I am not prepared to prove that they read the letters "Big Four" on the side of that car, nor that they remembered there was an enormous figure 4 printed in white on the red door of the car they wanted ; but I tell you they came pretty close to it.

NOTES OF TRAVEL

BY A. I. ROOT.

ANOTHER TRIP TO NORTHERN MICHIGAN.

I find myself the 20th of September in the Traverse region once more, and I am greatly interested in the different methods of farming that I see going on about me. For instance, Mr. Hilbert's 17-year-old boy is plowing under a tremendous growth of clover in order to sow rye. This rye is to be plowed under when in blossom, for planting potatoes. Mr. H. has for three or four years turned under rye for potatoes to the extent of several acres each year, and has *never* had scabby potatoes ; but when he turns under clover in the spring he often has a great part of his crop ruined by scab ; and, by the way, this opens the way to tell you that our new Russet, so called, has been here for three or four years, and is called the California Russet, and *never scabs*. It is grown largely, and would take the place of almost all others, but it does not yield like Empire State, Beauty of Hebron, and Rural New-Yorker. These three last are the great staple varieties. The Rural gets so large it is often hollow unless they prevent it by close planting. I told them I thought Carman No. 3 would be an improvement in this respect ; but it has not been introduced here very much.

Mr. Hilbert, situated out here in the country, ten miles from Traverse City, and a mile and a half from his postoffice, makes a use of the telephone I never thought of before. Last evening, before sending to the postoffice, he called up the postmaster and asked what mail there was for him. The answer was, "Two *letters* for A. I. Root, nothing else." I suggested he might, if on good terms with the postmaster, get him to read the postal cards to him. He said that, in strawberry time, the postmaster, by his request, often opened letters and read them to him *through* the telephone. One rainy evening after we had been kept indoors all the afternoon, friend H. called up several of his neighbors and introduced me through the phone. Mr. C. Cole is a peach-grower. He told me, in answer to questions, that his peaches from five acres were going to bring him *this season* fully $500. It gave me the fever to start a small orchard on some sharp high sandy hills on my 40 acre farm. I had figured these hills were too high and steep for any thing. I never saw finer peaches anywhere than we have here in great abundance.

Last Wednesday morning, as I looked out of the car-window, just at daylight I saw frost on the fences, grass, potatoes, and every thing else; but as I neared Traverse City, about sunrise, I was pleased to note there was less and less frost. An hour later, when on my wheel, I went along the beach on the bay, and I saw all sorts of garden stuff, even cucumbers and tomatoes, not harmed in the least; and since then I have not been able to find a thing injured on the whole peninsula. To-day in riding over the country we found one farmer who has 50 acres of potatoes. Until this season, very nearly all the potatoes have been dug by hand; but just now they are beginning to buy the Dowden diggers.

MORE ABOUT CLOVER.

Mr. Hilbert has *acres* of mammoth and medium clover that was sown among the growing corn in August, at last cultivating, and it is now just acres of green. He has grown crimson clover more or less for several years, but has decided, for this locality, it has no decided advantage over the red, especially as it doesn't stand the winter as well. He says that, as far as he knows, he first started sowing clover in corn. The seed is cultivated in with a fine-tooth cultivator running shallow.

CLOVER WITH BUCKWHEAT.

Now, this isn't all. Mr. H. also sows clover seed with all his buckwheat; and now when the buckwheat is about ready to cut, the ground is green with a thick heavy stand of clover that will come right on as soon as the grain is cut and removed. All around him are farms where there will be only bare ground where corn and buckwheat grew, while on his own place every field is green with luxuriant clover. When he comes to put in crops next spring, every field will have a covering that amounts to many loads of manure evenly spread, with no expense for hauling or spreading; and, in fact, it costs little more in any way than the expense of the clover seed.

The importance of clean pure clover seed comes in here. In one of his potato fields we saw quite a lot of large thrifty docks. The seed was in with the clover. When they first found it out he and the children pulled out a great many, but more are to be looked after yet. Of course, they do no very great harm if none are ever allowed to go to seed.

While careful, thorough tillage naturally brings the largest crop, there are occasionally queer exceptions; and the good farmer needs to have his eyes always on the alert. This is not strictly a grape region, yet some very good grapes are grown. Some years ago Mr. H. procured cuttings of some grapes that pleased him, and grew vines enough to cover an acre or more. He gave them clean culture and careful pruning for three or four years, but got so few grapes he decided not to go to the expense of posts and wire, and finally abandoned the field and let the vines go without pruning or cultivation. Of course, they sprawled all over the clean sandy soil, and last season he sold quite a fine crop of grapes, and has a still larger one this year. The ground slopes to the south, and the hot sand has the effect of ripening the clusters that almost or quite touch it, considerably ahead of grapes kept up on a trellis. When he made his cuttings he selected two varieties, one early and the other late, and now both kinds are so intertwined and run together it is quite an extra expense to gather them. Should you ever help to gather fruit, as I have just been doing, you will realize the importance of having each kind strictly by itself.

With blackberries he has had a like experience. Clean culture and pruning gave no paying crop; but when he gave them up and let them go he had beautiful berries in abundance. This season he did nothing to the patch but to cut paths for the pickers, with a brush-scythe.

PEACH GROWING IN THE TRAVERSE REGION.

I spoke of a five-acre peach-orchard where the fruit this year had sold for $500.00. Well, since then we have visited another place where we found the largest, most luscious, and handsomest fruit I ever saw anywhere. Trees put on new ground, and that have never had any manure of any kind, are just as full of fruit as they can be and not break down. Some of the older trees, where stable manure has been applied, are badly broken by the weight of the fruit; but the owner says they would have held the load safely had it not been for the high wind about the time of the Galveston tornado. He gives his trees clean culture till July. After this the weeds, barn-grass, etc., are allowed to grow. He says he does not want to do any thing to encourage growth in the fall; and the weeds that grow later hold the snow on the ground.

Just below the top of the hill on which Mr. Cole's orchard is located are numerous springs; and Mr. Hilbert thinks there is a clay subsoil that holds the water, forming a sort of natural sub-irrigation, and this is why Mr. Cole gets such wonderful crops without adding to the soil any sort of fertility. Mr. C. showed us peach-trees 35 years old that are still bearing marketable peaches. It is really wonderful, the beautiful peaches we find all about in this region, and many times very fine in spite of neglect and want of care year after year. Mr. Hilbert got the peach fever some years ago, and put out over 2000 trees; but more than half were killed outright, and others greatly damaged by the climbing cut-worm. This worm climbs the tree, and eats off every bud as fast as it starts to grow in the spring. The Michigan Experiment Station said a bunch of wool tied about the trunk would keep the worm from reaching the top; but Mr. H , after putting the wool on his whole 2000, found the worms gathered in the wool at its lower edge and girdled the tree by eating the bark when they couldn't find any thing else to eat more to their liking. The Station afterward discovered this, and added a caution.

SWAMP MUCK FOR MULCHING STRAWBERRIES.

Mr. Hilbert says this is the best thing he ever used. He throws it out of the swamp and draws it on the snow, and spreads it evenly all over the plants. It keeps them out of the dirt, and prevents the soil from getting on the berries. This peculiar muck will not stick to the fruit at all, but I am inclined to think all swamp muck would not answer as well in this respect. The light sandy loam of this region is the ideal soil for strawberry-growing.

IMPOSTORS IN HORTICULTURE.

We clip the following from a recent number of the *Ohio Farmer:*

> Unfortunately for the amateur the strawberry-plant is dumb or else it would prefer charges of forgery against unscrupulous propagators and introducers, who are with impunity defrauding innocent purchasers out of thousands of dollars every season by attaching new names to old berries of great merit, and disposing of their plants at fabulous prices. In the spring of 1898 the writer received of a leading firm of more than an average reputation for fair dealing six strawberry-plants as a premium, accompanying a small publication devoted to small fruits. This berry was widely advertised as the "Star of first magnitude among all the strawberries." Here are some of the fulsome expressions of the introducer: "Offered us any price we would name for plants." "In productiveness we have never seen its equal." "It matures all its berries in a dry season when all ordinary berries are a complete failure." "A vigorous, strong grower, with healthy, green foliage, with perfect blossom." "For profit we know of no berry that will equal it." "Its superiority was very marked both in size, quality, and productiveness."—Well, we nursed the plants up to the point of becoming "starrageous." Imagine our surprise and chagrin, when the true test, "by their fruit ye shall know them," proved the half-dozen plants bore Sharpless berries which we had been producing for nearly a quarter of a century.
>
> The characterless propagators of frauds of this type, whether in grains, vegetables, or fruits, ought to be given board, lodging, and a job by the State to protect society from their impositions. If all would resolve to purchase no new introduction until it had received the approval of the experiment station (one of their most important services to the farmer) old fruits, etc., could not be palmed off on the people for many times their true value.

I wish to say amen to the above. There are certain seed-venders who make it a point almost every year to introduce some old well-known strawberry, potato, or something else, with a spread-eagle flourish. Even though our experiment stations do (eventually) tell us again and again that the new thing is so much like a well-known variety they can not tell the difference, yet these fellows keep right on. The fact that the variety sent out is a really good one is no excuse—it is a fraud all the same. Our readers may remember we have a potato called the Poor Man's Friend, and it is a very good potato in some respects; but after we had had it for two or three years different people began remarking, "Why, this looks exactly like the old Blue Victor of years ago." And so it is. When I thought I had something new I was fussing with an old well-tried variety, in many places discarded, because, although it is a large yielder, it is poor in quality. As a rule I would advise our readers to beware of any seed catalog that makes a big flourish of being a friend of the poor farmer in the way of "mortgage-lifter" potatoes, "poor man's friend," etc. The dollars that are pictured in such wonderful plenty usually fall into the coffers of the man who asks ten times what the goods are really worth in the open market. By all means, let our experiment stations decide what is really meritorious and what is not.

MAKING CUCUMBER PICKLES; PICKLE-FACTORIES.

Inasmuch as we are in the pickle-factory locality, several inquiries have come on in regard to the way they manage the crop. I wrote the matter up some two years ago. The cucumbers, as they are brought in by the farmers, are emptied into very large tanks, and immediately covered with salt, and afterward water is poured on them, just enough to cover them. I do not suppose it matters much how much salt you put on, so the cucumbers are kept under the brine. The following additional information is from Mr. Greiner in a recent number of the *Farm and Fireside:*

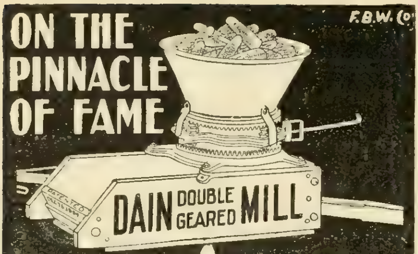
> The cucumbers are picked every other day in the morning as the dew is off, and sorted into three sizes from two to seven inches in length, each size packed by itself. If possible, the packing is done in the afternoon of the day they are picked. Barrels may be used. When full the cucumbers are covered with brine of sufficient strength to float a potato. No more salt is to be added. After standing three or four days, to settle, the scum should be removed and each barrel refilled from other barrels containing cucumbers of the same size which had been in brine of like strength The barrels when headed up and marked are ready for shipment. A forty-gallon barrel will hold from five thousand to six thousand of the smallest size, and from ten hundred to fifteen hundred of the largest. The cucumbers must be cut from the vines with a sharp knife, or, better, scissors, leaving on each a bit of stem. Cucumbers put up in this brine will not shrivel, and need but little refreshing; but housewives must bear in mind that they will not keep through the second summer without adding more salt.
>
> "Pickling.—Drain them from the brine, fill any receptacle two-thirds full, pour boiling water over, and let remain twenty-four hours. If too salty (which will depend upon the size) pour off the water, stir thoroughly from the bottom, that they may freshen evenly, and again cover with boiling water. After twelve hours drain, and cover with boiling weak vinegar; three days later drain, and cover with cold vinegar of full strength sweetened and spiced or not, to suit the taste. I will say, however, that I do not know of any grower around here who ever sold his pickles in any other shape than put up in brine. I am not aware that there is a wholesale market for ready-made pickles; that is, for pickles in vinegar. And even if there were, the average grower, lacking the skill and experience necessary for putting up pickles in vinegar or in any fancy style, would do far better to sell his pickles in the brine."

THE LITTLE SPRAYER FOR KEEPING FLIES OFF FROM CATTLE.

I clip the following, from Fred Grundy, in a recent issue of the *Farm and Fireside:*

> But for my little tin atomizer, or sprayer, and a good supply of kerosene, I should have a time milking. It is astonishing how quickly a few whiffs of kerosene along the sides and among the legs of a cow will send every fly to the floor or hunting for an opening to get out of the stable. At first the cow does not like to have the kerosene mist sweep over her, but she soon gets used to it; and when the stable door is opened she will make a wild dash for it, to get rid of her tormentors. The kerosene comes out of the sprayer much like smoke, and but very little is required to clear the flies out of a small stable. Sometimes flies will gather on the walls inside the stable by the thousands, apparently waiting for the animals to come in. A few squirts along the walls with the sprayer will kill or drive them out in a hurry. Every one who keeps horses or cows should have one or more of these useful little tools in the stable.

ON THE PINNACLE OF FAME



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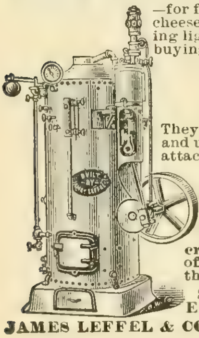

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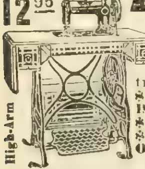

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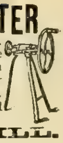

and a flock of hens means **egg money** the year round. **Green Cut Bone** you know makes hens lay double the eggs winter and summer. This machine runs easier than any other because it is the only ball-bearing bone cutter made. It cuts bone quickly—shears it off in fine shavings. Can't choke; cleans itself; is strong and substantial. Send at once for our **free** illustrated catalogue No. 39

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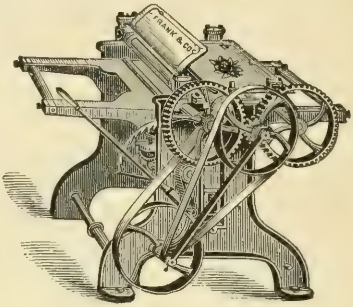

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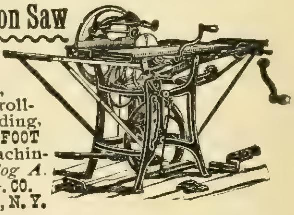

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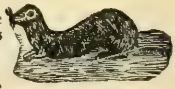

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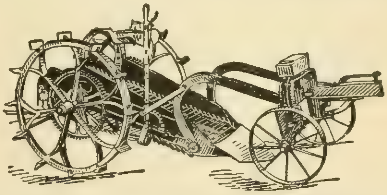

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The Chicago, Milwaukee & St. Paul will sell regular Homeseekers' Excursion tickets to all points in South Dakota, at one fare plus $2.00 for the round trip, on September 18 and October 2, 1900. This will enable parties to visit the Corn Belt Exposition to be held in Mitchell, S. D., September 26 to October 4, 1900, inclusive. This exposition is held to demonstrate the great agricultural resources, wealth, and possibilities of this thriving State. The exposition is held in a gorgeously decorated corn palace which for beauty can hardly be excelled anywhere by a building of a temporary nature. There are thousands of acres of cheap lands left in South Dakata that will, under the present conditions in that State, rapidly increase in price, and the holding of this corn palace with its many attractions, that both amuse and instruct, should be an opportunity that all land and investment seekers should embrace.

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tested by the side of other strains by Mr. Chalon Fowls, a honey-producer, of Oberlin, O., and here is his report, dated Aug. 29, 1900 :

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Warranted queens, 75c each ; 6, $4.00 ; 12, $7.00. Select warranted, $1.00 ; 6, $5.00 ; 12, $9.00. Safe arrival and satisfaction guaranteed. I am filling orders by return mail, and shall probably be able to do so till the close of the season. Circular free.

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For Sale. 25 winter-cases made from ¾-in pine stock, dovetailed corners and shingled roofs; large enough to cover a Dovetailed hive, and leave six inches for packing all around. Can not be knocked down. Price $5.00 for the lot.

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I have had fifteen years of experience in producing honey and rearing queens ; and I am breeding queens from a queen procured last spring from J. F. McIntyre, of Sespe, California. He describes this stock on page 12 of Gleanings for Jan. 1st, as filling the supers when other colonies were actually starving. The drones in my yard are from excellent stock—such as that of J. P. Moore, of Kentucky. I rear queens by the Doolittle method, send them by return mail, and guarantee safe arrival, purity of mating, and satisfaction, at 50 cts. each, in any quantity. Money refunded if queens are not satisfactory. Send for circular.

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Best on Earth ! A queen I had from you lived 3 yrs., and was the best queen I ever had, and did not swarm.—E. W. Brown, Morton Park, Ill., July 30, 1900.

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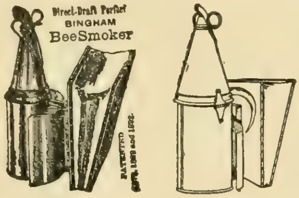

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DEAR SIR:—Inclosed find $1.75. Please send one brass Smoke-engine. I have one already. It is the best smoker I ever used. Truly yours,
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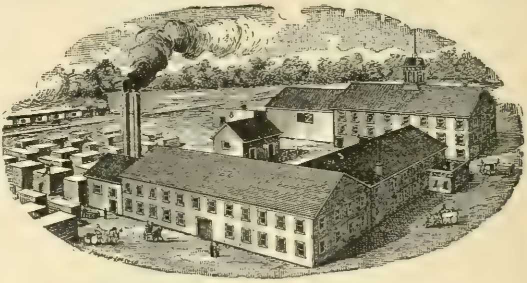

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Closing-out Sale.

Owing to other business, I wish to close out my present stock, and will make price very low for next thirty days.

Untested, each	$ .55
Untested, per ½-dozen	3.00
Warranted purely mated, each	.60
Warranted purely mated, ½-doz.	3.50

These queens are bred in full colonies, from home-bred and imported mothers. Have both light-colored and dark leather-color strains. If you can use any, order soon, or may not be able to supply you. Address

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ALL INFERIOR QUEENS!

should be replaced with good young ones. With such queens you will have better success in wintering, and a strong colony for the earliest honey-flow. I am a honey-producer as well as a queen-breeder, and know the value of a good queen in a honey-hive. I have selected for my mothers, queens that I consider perfect in every respect. Their bees are large, gentle, and wonderful honey-gatherers. My drone-mothers are also carefully selected.

◆

Queens Go by Return Mail.

One untested queen, 50c; 12 for $5.50. One tested queen, $1.00; 6 for $5.50; 12 for $8.50. Write for prices on larger numbers.

◆

$10 Reward to the person who sends me the most money for queens between April 1 and November 1, 1900.

◆

W. O. Victor, Wharton, Texas.

HONEY-JARS.

One-pound square, $5.00 a gross; with labels, $5.60 a gross.

Cartons & Shipping-cases

for all sizes of sections. Our cartons are of a superior quality of cardboard, but cost no more than others. Sample free.

Untested Italian queens, 60c. Tested, $1.00. Catalog free.

I. J. Stringham, 105 Park Place, N. Y. Apiaries at Glen Cove, L. I.

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Honey Column.

CITY MARKETS.

Albany.—Honey receipts light yet, not enough coming to supply demand, and prices well sustained all around—better than for many seasons. Our market is better than usual on account of the destruction of so many colonies near here that formerly came almost wholly to this market. We quote fancy white comb, 16; medium, 15@16; mixed, 13@14; buckwheat, 12@13. Extracted white, 8@8½; amber, 7@7½; dark, 6½@7. Beeswax, 27@29. **MacDougal & Co.,**
Successors to **Chas. McCulloch & Co.,**
Oct. 9. Albany, N. Y.

Chicago.—The receipts of all kinds of honey are lighter than usual at this season of the year. The market is steady with no advance probable, as prices are now at a point that is curtailing consumption. Fancy white brings 16; No. 1, 15; and good white, but travel stained or irregular in shape, 13@14; amber, 10@12; dark, 8@10 Extracted white clover and basswood, 7½@8; amber, 7@7¼; buckwheat and other dark grades, 6@6¾. Beeswax, 28.
R. A. Burnett & Co.,
Oct. 8. 163 South Water St., Chicago, Ill.

New York.—Demand for comb honey good, particularly white. We advise shipments now, for this is the time of the season to realize best prices. We quote the market to-day as follows: Fancy white, 1-lb. sections, per pound, 16@17; A No. 1, 16; No. 1, 15@16; No. 2, 12@14; amber, 11@13; buckwheat, 10@12. Extracted white, 8@8½; light amber, 7@7½; buckwheat, without demand, 5½@6. Beeswax, dull but firm, 28@29.
Chas. Israel & Bro.,
Oct. 9. 486 Canal St., New York City.

New York.—Fancy white, 15@16; No. 1 amber, 13@14½; amber, 9½@11; buckwheat, unglassed, 10; buckwheat, glassed or cartons, 11; white extracted, in barrels, 7@7½; light amber extracted, in barrels, 6½@7; buckwheat extracted, in kegs, 5½@6. Beeswax, good demand at 28. We advise producers to market honey now, not to hold it. **Francis H. Leggett & Co.,**
Franklin, West Broadway, and Varick Sts.,
Oct. 8. New York City.

Milwaukee.—The supply of comb honey is very small on this market, and the demand is fair, and we can obtain good values on shipments; and all who may have fancy honey we advise shipping now. We can now quote our market as regular on fancy 1-lb. sections, 16@17; A No. 1, 15@16; No. 1, 15@16; fancy amber, 14@15. Extracted in barrels, kegs, and pails, 8½@9½. Beeswax, 25@27. **A. V. Bishop & Co.,**
Oct. 2. Milwaukee, Wis.

Buffalo.—There is very little honey coming in, and our market is in excellent shape for white comb. No danger of lower prices. Fancy, 17@18; A No. 1, 16@17; No. 1, 15@16; No. 2, 14@15; No. 3, 13@14. Extracted, white, 7@8; amber, 6@7; dark, 5½@6.
Oct. 3. **W. C. Townsend,** Buffalo, N. Y.

Detroit.—Fancy white and A No. 1 comb honey, 15@16; No. 2, 14; No. 1 dark, 12. Extracted white clover, 7½@8; darker grades, 5@6. Very little extracted honey in market. Beeswax firm with good demand, 26@28. **M. H. Hunt & Son,**
Oct. 21. Bell Branch, Mich.

Schenectady.—Demand good and prices firm at 16@17 for fancy white in paper cartons; other grades of white, 13@15; buckwheat, 10@12, according to style and quality. Extracted quiet; no demand except for fancy glass packages suitable for table use.
Chas. McCulloch,
Oct. 9. Schenectady, N. Y.

For Sale—Thirty tons light amber extracted honey in 60-lb. cans. **R. Hyde,** Visalia, Cal.

Wanted.—Extracted honey. State quantity and price. We pay cash on delivery. Reference, Wisconsin Nat'l Bank. **E. R. Pahl Co.,** Milwaukee, Wis.

For Sale.—1000 lbs. extracted honey in one-gallon tin cans, at 8½ cts., f. o. b. here. Sample free.
R. H. Bailey, Ausable Forks, N. Y.

Wanted.—Comb and extracted honey. State price, kind, and quantity; also rate of freight to Boston.
Blake, Scott & Lee,
31 and 33 Commercial St., Boston, Mass.

Wanted.—Comb honey. We are in the market for either car or local lots. We especially desire some fancy white clover and basswood. In writing state quantity and price. **Evans & Turner,**
Town St., Corner 4th, Columbus, O.

Wanted, Honey and Beeswax.—We have a tremendous and growing trade in this line, and should like to hear from all having such goods to sell in any part of the country, with quantity, description, and lowest cash price.
Thos. C. Stanley & Son, Fairfield, Ill.

Wanted.—Comb and extracted honey. State price, kind, and quantity. **R. A. Burnett & Co.,**
163 South Water St., Chicago, Ill.

Wanted.—Quantity lots of comb and extracted honey. **B. Walker,** Evart, Mich.

Wanted.—To buy comb and extracted honey. What have you to offer? State price and quantity.
Ed. Wilkinson, Wilton, Wis.

For Sale.—1000 lbs. of a No. 1 comb honey; also 1000 lbs. of extracted.
Wm. Morris, Las Animas, Col.

For Sale.—Extracted honey from alfalfa; 60-lb. cans at 7 cts., and smaller cans.
D. S. Jenkins, Las Animas, Colo.

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Devoted to Bees, Honey, and Home Interests.

Published Semi-monthly by

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E. R. ROOT, Editor of Apicultural Dept.
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For $1.50.—Gleanings and Cosmopolitan or McClure's Magazine or American Gardening or N. Y. Christian Herald.

For $2.00.—Gleanings and Country Gentleman or Pacific Rural Press.

For $2.50.—Gleanings and Review of Reviews.

For $3.00.—Gleanings and Scribner's Magazine or Scientific American.

SPECIAL NOTICES BY BUSINESS MANAGER

BEESWAX WANTED.

We are in the market for beeswax, and are paying 26 cents cash, 28 cents trade, for average wax delivered here. The market price of wax is higher than is usual at this time of year, hence the above offer, which is as much as we have paid at any time during the past year. If you have any to offer you will do well to ship it. Be sure the packages are put up securely, and marked with your name and address, and send us a notice by mail, stating the exact weight of your shipment, gross, tare, and net, so that when we receive it we may know whom it comes from, and whether any has been lost on the way.

HONEY.

During the past ten days we received two cars of comb honey from Colorado, containing over 2300 cases of choice white honey. After filling our orders we have only about 200 cases left; and at the rate orders are coming these will last only a few days. We have considerable Michigan honey bought, but the most of this is also sold again, and is shipped out as soon as it arrives. We have also a lively trade in extracted honey, and most of this moves out about as fast as received. Many lots sold from sample go direct from the producer to our customer. Reports received from Colorado indicate that most of the honey which can be shipped by carload has already been picked up by large buyers, and the price is very firm. We are selling fancy white at 17 cts.; No. 1 at 16; amber at 2 cts. less than white. Extracted brings from 7 to 10 cts. per pound, according to quality. Clover honey in glass jars of a scant pound capacity we are selling to the merchants at $4.00 per case of 2 dozen jars.

Special Notices by A. I. Root.

WANTED—EARLY POTATOES FOR SEED FOR FLORIDA PLANTING.

From whom in North Carolina can I get some good Irish potatoes for seed? I want potatoes that were dug in July, or early enough so that, if planted here between now and Nov. 10, they will sprout and not rot in the ground. Northern and Eastern seed potatoes, if planted much before December or January, usually rot in the ground, not having been dug a sufficient time before planting—or at least that is the general opinion here. W. R. Moses.

West Palm Beach, Fla., Oct. 2.

We choose to give the above a place here free of charge, because the matter is one that has come up several times. Will whoever has such potatoes as are described correspond directly with friend Moses? and I wish the latter would let me know his success in growing the first new potatoes for our city markets.

KIND WORDS FROM OUR CUSTOMERS.

The premium queen received July 14 has proved to be purely mated, and is an unusually fine specimen of her class. She is quite as large and yellow as my best breeders, and I am very well pleased with her.

Penllyn, Pa., Aug 4. J. C. Detwiler.

I inclose herewith $1 00 to pay for Gleanings. I will add that the queen (premium) received from you last season is doing so well that I request that another be sent under the same conditions. C. W. Rice.

Pleasant Valley, Va., Aug. 19.

A KIND WORD FOR THE A B C BOOK.

Dear Friend Root:—Are you surprised to know you are my friend? Years ago a neighbor gave me your A B C book, the first issue, and it has been my guide and friend ever since. I have followed its teachings pretty closely, and succeeded beyond all I dared to hope for.

My bees have done well this summer. I now have 103 colonies. I expect to have about 2500 lbs. in all. Our honey is from wild flowers mostly, and is of a very fine quality. We get no dark honey here. A bright amber is the darkest we get. The wild touch-me-not, of which you make mention in the A B C, grows here by the acre, and willow-herb by the hundred acres. MRS. MATE WILLIAMS.

Nimrod, Minn., Sept. 20.

Report of Mr. E. R. Root in Regard to the Length of the Tongues of

Moore's Strain of Italians

Medina, O., Sept. 28, 1900.

J. P. Moore, Morgan, Ky.— Dear Sir:—Samples of bees are duly to hand. The tongues of bees No. 6 are $\frac{20}{100}$. I would say to you in general that the lengths of the tongues of your bees are greater than any other lot we have received. That queen that reared the $\frac{20}{100}$ length of tongues should be preserved. If her bees are the red-clover kind, she would make good stock to cross with our red-clover.

Yours very truly, The A. I. Root Co.,
E. R. ROOT.

Sample of bees No. 6 were from my famous honey queen whose daughters have made such a wonderful record as honey-gatherers, especially as red clover workers. See my previous advertisements, beginning June 1. Warranted queens, 75c each: 6, $4.00; 12, $7.00. Select warranted, $1.00 each; 6, $5 00; 12, $9.00. Safe arrival and satisfaction guaranteed. Circular free. I am still filling orders by return mail.

J. P. Moore, Lock box 1, Morgan, Pend. Co., Ky.

HARD TO BEAT!

"I have several queens, bought of you two and three years ago. The bees, for gentleness, beauty, and honey-gathering qualities, are hard to beat.—Jas. Ives, Smithville, N. J, Aug. 31, 1900.

See circular and ads. Queen-mothers give large fine queens, and queens that are large, vigorous, peaceable, and best of honey-gatherers. Try a few. Prices, untested, 75 cts.; $7 00 per dozen; select, $1.00; tested, $1.00; select tested, $1 50.

J. B. CASE, Port Orange, Fla.

Bees for Sale. Full colonies of good stock in 10-frame hives, $4.50; in 8 frame hives, $4.00 Address B. A. ALDRICH, Smithland, Woodbury Co., Iowa.

WANTED.—To correspond with some bee-keeper near New Orleans who has honey for sale. Address F. W. CLEW, Oakland Park, Half-way House, New Orleans, La.

Belgian Hares

I have some fine hares for sale at reasonable prices.

J. F. Moore, : Tiffin, Ohio.

Wants and Exchange.

Notices will be inserted under this head at 10c per line. You must SAY you want your ad. in this department, or we will not be responsible for any error. You can have the notice as many lines as you please; but all over ten lines will cost you according to our regular rates. We cannot be responsible for dissatisfaction arising from these "swaps."

WANTED.—To exchange firearms for incubators, bone-cutter, oyster-shell mills, and brooders. Address 216 Court St., Reading, Pa.

WANTED.—To exchange Double Diamond tandem, fitted with thor hangers, thor hubs, etc., for comb honey. ROBERT B. GEDYE, LaSalle, Ill.

WANTED.—To buy 500 bu. No. 1 dry rice popcorn. GEO. G. WILLARD, 270 Pearl St., Cleveland, O.

WANTED.—To exchange for anything useful in bee business, tested or untested Italian queens from imported or golden mothers; bred 3¼ miles apart. Also want pure black-and-tan rat pup. J. M. DAVIS, Spring Hill, Tenn.

WANTED.—To exchange a good new house and an acre and a half of land and a small apiary, for half cash and half labor on a fruit-ranch. A good chance for a poor man with a family to get a home in California, where good help is in great demand, especially during the fruit season. For particulars address E. B. BEECHER, Auburn, Placer Co., Calif.

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1200 FERRETS FOR SALE. Small, medium, and large sized; some trained. **First-class stock.** New price list free
N. A. KNAPP,
Rochester, Lorain County, Ohio.

Queens from either Doolittle or home-bred Golden Italian mothers. All queens warranted purely mated to Golden Ital'n drones. Each, warranted, 75 cents; tested, $1.00.

Carl F. Buck, Augusta, Butler Co., Ks.

WANTED.—Your printing. Note-heads, Env., 35c 100; Tags, 25c 100; Labels, 20c 100, postpaid. Price-list free. Downer Printing Co., Box 544, South Haven, Mich.

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The Great Chicago Convention Report will appear in full only in the AMERICAN BEE JOURNAL. This alone will be well worth one dollar. This report begins in the number for Sept. 13. You should read it. The greatest convention of bee-keepers ever held on this continent was that of the National Bee-keepers' Association, held in Chicago, Aug. 28, 29, and 30, 1900.

Read These Big Offers: We will send to a NEW subscriber for 1901, for one year (at $1.00), the last 16 numbers of 1900 FREE; or, if you want *only the 16 numbers* send us *20 cents*, and mention the fact.

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GLEANINGS IN BEE CULTURE

A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS

ILLUSTRATED SEMI-MONTHLY

Published by THE A. I. ROOT CO.
$1.00 PER YEAR MEDINA, OHIO

VOL. XXVIII. OCT. 15, 1900. No. 20.

STRAY STRAWS FROM DR C. C. MILLER

J. M. CUTTS pinched the head off a queen, apparently because she flew when he tried to get her, p. 775. Cutting off a wing would have stopped her flying, without the loss of a queen.

IF YOU HAVE the exceedingly unaristocratic habit of sugaring your porridge, try a little honey on it instead of the sugar some morning. You will find it a great improvement on sugar.—Martha's Management, in *Chicago Record*.

YOU SAY, Mr. Editor, you would have broken up that nucleus that kept using up virgin queens, p. 762. Very likely that would have been wise, and I was urged to do so; but my Dutch was up, and I said that nucleus should raise a queen if it took all summer, and it did take all summer.

IT'S BEGGING the question for Chalon Fowls to assume that candied honey can not make a fine display as well as the clear liquid. It's all a matter of taste and association. Here are two displays in bottles—one clear as crystal, the other dark brown. If one is told that one is honey and the other soft soap, he admires the clear display. But if told the two are kerosene and maple syrup, which does he admire? But I'm willing to compromise with Bro. Fowls, and let him sell in liquid form if he'll let me sell in the candied state.

PROF. GILLETTE'S experiments showed that, with the best foundation, bees built comb as light as natural worker comb; also that natural worker comb was lighter than natural drone comb. Without foundation, bees build largely drone comb in sections. Taking these three facts together, it is hard to get away from the conclusion that, with best foundation, there is less gob than where all is entirely natural. [Just so; and Prof. Gillette's experiments coincide almost exactly with our own; and you will remember that we (Mr. Weed and I) advanced this proposition some two years ago.—ED.]

MR. EDITOR, you call C. H. Pierce's plan of moving bees, p. 772, "a new plan," which is hardly correct, except the cellaring. The plan has been given before, and is all right. Somerford's nucleus plan is on the same principle. I've made fair success by simply moving bees in the evening and letting them stay shut up till they became very uneasy about getting out next morning. Mr. Pierce's cellaring is good for the wind-up. [Perhaps you are right; but I do not remember where a plan similar to Mr. Pierce's was described in GLEANINGS.—ED.]

A FOREIGNER once remarked to me what a strange thing it seemed to him to see this nation of free and independent people such abject slaves, bound hand and foot by the ties of political party, the most intelligent submitting to the lash of the bosses. But the bonds have been strained a little too tight, and are beginning to break, when a plain law like the canteen law is nullified. Thousands of men who may not speak out as plainly as A. I. Root, on page 779, will yet speak with some emphasis their disapproval at the ballot-box.

THE FOOLISH NOTION that bees can not sting one while he holds his breath has started the rounds again. The trouble is that almost any error will be copied; but when contradicted as an error, the papers that gave it currency will not take the trouble to give the contradiction. To this day one sees Chapman's honey-plant lauded in this or that paper; but the statement that it is of no practical value seldom follows in later issues. [The article on the Chapman honey-plant has been stricken from the latest edition of the A B C book, now in the press. What was said about the plant was all true, and the truth makes the readers anxious to try it in spite of the statement that its cultivation will not warrant the investment.—ED.]

PROPOLIS may yet come to be in great demand, if a report in *Leipziger Bztg.* is to be trusted. A quantity of propolisin was sent to the English army in South Africa, and wounds treated therewith healed promptly without suppuration, whereas the same kind of wounds were very troublesome previously, making many amputations necessary. When the supply of propolisin was exhausted, the serious character of the wounds returned. [Now look here, Mr. M. D. Why didn't you tell us what this p—,p—, pro—propolisin is? I will stop right here and look at the dictionary.—There! I have just consulted the Standard, but I do not find the word. From what you say I should judge it was a preparation made from propolis.—Ed.]

A QUEEN-CAGE as a glossometer may be all right in *your* hands, Mr. Editor, but something else might be better in the hands of us common bee-keepers. After the queen-cage has done its work, if I understand the matter rightly, the real measuring of the tongue has yet to be done with a micrometer. What is wanted is an instrument that will automatically register the length of tongue, with no care on the part of the bee-keeper but to give the bees the loaded feeder or glossometer. But nowadays I am more interested in measuring a colony by the number of pounds it stores. [But why, doctor, do you want the glossometer to be *automatic?* And, again, I do not see how you could possibly eliminate the one item of "care" on the part of the investigator, as you suggest.—Ed.]

AN ITEM is going the rounds of foreign bee-journals to the effect that when bees are stupefied with ether their dispositions are so changed that colonies with laying workers immediately proceed to rear queen cells from worker brood given them. But will not such colonies often rear proper queen-cells when they utterly refuse a queen? [Yes; but is it not possible that the fumes of ether or chloroform *might* have the effect of compelling a colony to accept a queen or some queen-cells which they had formerly refused? Either drug would leave a slight odor. In any case it would take the bees some time to get over their "drunk." While I do not believe it is a good idea to encourage drunkenness among human beings for the sake of rendering them more docile (for it works the other way), yet it *might* have a beneficial effect with a stubborn colony.—Ed.]

MR. EDITOR, I am indebted to you for straightening me out when I was inclined to consider bacilli as animals instead of plants, and now you are misleading by speaking of "the eggs of the microbes." Quit that, and call the spores seeds and not eggs. [In speaking of "eggs" I used the term somewhat apologetically (as you will notice by referring again to the sentence), in order that the average reader might understand a little better the idea I was attempting to convey. One can see how an egg-shell might be thick enough to resist the effects of acids; but he would scarcely credit the notion that the covering of any seed would be equally acid-proof. A bacillus is a genus of bacteria, a form of microscopic vegetable growth that is exceedingly common. In some cases the bacteria cause fermentation, and in others decomposition. In most cases they are harmless; but in others they are exceedingly destructive and dangerous, as in the case of those causing consumption, diphtheria, and like diseases. There now, I didn't mean to offer instruction to a physician, so I'll stop lest I put my foot in it.—Ed.]

BEES SEEM to have quite a habit of carrying wax from one place to another. Experiments reported in *Le Rucher Belge* used foundations of different colors. In one hive a frame of green foundation was put, and many cells of the other combs were sealed green. That's how dark sections come in this locality. They are sealed white, and afterward black wax from the brood-combs is plastered over them. [Bees have a way of appropriating wax wherever it sticks out in minute hunks, so that they can easily carry it to some place where it will be of some use in the general economy of the hive. It is owing to this fact that side storing was generally abandoned years ago. That is to say, there was a time (you remember the time, doctor, when we were boys) when wide frames containing sections were put in the brood-nest; but, if I remember correctly, so many of those sections were discolored by reason of their proximity to dark or black old combs, that bee-keepers soon found the necessity of having all sections filled in the upper story; and now it has come to pass that top storing is used almost exclusively all the world round.—Ed.]

MY TOP-BARS are 1⅛ wide, and the space between two top-bars is ¼ inch. I've been leaving a space of ¼ inch between the outside top-bar and the side of the hive. But that leaves only ⅜ inch space between the brood-comb and the side of the hive, and the space between two brood-combs (unless the combs are very old) is ½ inch. If a half-inch space is needed between combs to hold enough bees to keep the brood warm, the same or greater space is needed on the outside. So there should be a space of at least ⅜ inch between top-bar and wall of hive. But when honey is sealed in brood-combs, there's only ¼ inch space between them; so if the outside comb is to be used for honey, the top-bar should be ¼ inch from wall. Shall I space to favor honey or brood in the outside comb? [I'd cater to convenience. If the hives are left outdoors all the year round, they should be double-walled; and in such hives I would have bee-spaces approximate ¼ inch. If the hives are single-walled when carried into the cellar or other repository, there will be not much more need of the extra ⅛ space than there would be if the hive were double-walled. Many facts from continuous observation are forcing us to believe for Medina, at least, that a double-walled hive is not only a good thing during winter, but a good thing all summer. It is a protection against the great heat occasioned by the direct rays of the sun; and during the spring, early summer, and late fall months the double walls afford a most decidedly beneficial protection. I am beginning to believe that the time will come when double hives will be found to be more economical in the end than those of single-thickness lumber. Our Mr. Wardell has found it to be an advantage to leave cushions on top of the supers or brood-nests all summer. This is no new idea. It has been advanced by many others. Now then, if the cluster is protected, is not the bee-space conundrum solved?—ED.]

PICKINGS
FROM OUR NEIGHBORS' FIELDS.
BY STENOG.

Now in clouds the leaves are falling
  Silently and slow—
Fitting types of human frailty
  And of honors here below.

AMERICAN BEE JOURNAL.

The prominent feature of the Old Reliable just now is the report of the late Chicago convention. This is doubtless the best report of the best convention the bee-keepers of this country ever had. This report alone is worth all the paper costs for a year.

* * *

They've been having grasshoppers in Utah in such numbers as make the plague of hoppers in Egypt easy to be believed. Mr. Lovesey says:

> So far as looks were concerned, you couldn't tell an alfalfa-field from a barnyard, or an apple-tree from a plum-tree; and some days, just before sundown, the grasshoppers would gather up to roost on the bee-hives so thick that you could scarcely tell a white hive from a black one; and while they bit and killed a few bees, they did leave the hives; but I felt mean enough to wish them all in the lake or some other good place.
>
> There is another old adage, that things are never so bad but they might be worse, so one morning I went out to the bees, and I don't know which feeling predominated, discouragement or disgust; and what should I find but those blessed gulls from off the islands in the Salt Lake, devouring the "hoppers" by the wholesale?

* * *

Mr. L. Kreutzinger, a prominent bee-keeper living near Chicago, gave a honey harvest on the 15th of September. About 200 people from the city took part. Among the visitors were Mr. Toshiro Fujita, consul of the Japanese empire, with his chancellor, Mr. T. Funatsu; Mr. Baron A. A. von Schlippenbach, Imperial Russian consul; Dr. Walther Weber, consul of the Imperial German Government; and about 12 teachers from the public schools. Such things can not fail to do much good in introducing progressive apiculture into Europe, and popularizing it here at home.

* * *

Policeman Smith found a honey-bee's storehouse in the middle of an old tree that blew down in Rogers Park, Chicago. His long absence caused a search to be made for him, when he was found seated near the fallen tree, ladling honey from the stump, and putting it into his mouth. Policemen are sometimes found in worse business than that.

* * *

Concerning the right to a certain place to keep bees, as against the right of any other man, Dr. Miller says: "A man who has for 25 years kept in a given locality an apiary sufficiently large to stock the territory, has a better right to that territory than any new comer." He well says, that is the position of the entire fraternity.

There are very few, I hope, who will not enter fully into the feeling that animated Mr. C. P. Dadant when he again stepped foot on the shores of his native land, France, and once more entered the city he once called home. His own words are interesting:

> It is now 37 years since we landed in America, and we are more attached to our adopted country than to the land of our birth; but a visit to the scenes of one's childhood has an irresistible attraction. I went to see the city where I was born—Langres—on top of a high cliff, a walled fortress, such as does not exist in America; and when I reached it I found myself much in the position of Rip Van Winkle after his 20 years' sleep, with the difference that the time was 37 years, and that I had been wideawake a good portion of that time. But, one generation has passed, and I find the sons where the fathers used to be. Friends of 25 are now 62. It is old age instead of youth.

BRITISH BEE JOURNAL.

A correspondent inquires as to the nature of propolisin, the substance referred to by Dr. Miller in Straws. The editor says:

> We are hoping to have some further information regarding the substance referred to and so named by its "inventor" from our esteemed contributor, Mr. R. Hamlyn-Harris. Meantime we are not very clear as regards the analogy between "propolisin" and the propolis of the bee-hive.

* * *

In giving an account of apiarian exhibits, Mr. E. H. Taylor says the hives exhibited by The A. I. Root Co. are not, in his opinion, adapted to the cold winters of England. In view of the perfect success attained here in wintering, and where, too, we have arctic winters for four months, the remark seems like a joke, especially as the climate of England is what we call moderate at all times. Mr. Taylor says Great Britain was about the only nation not represented at Paris among the bee-keepers. The exhibition as a whole seems to have been a great success. Mr. Taylor pays a high tribute to the thoroughness with which the bee-keepers of the continent of Europe study bee-keeping.

GENERAL CORRESPONDENCE

IMPROVEMENT OF RED CLOVER AND BEES.

What has been Done by Seedsmen and Fruit-growers in the Development of New Varieties; the Time Factor; why Shorter Corolla-tubes are More within our Reach than Longer Tongues.

BY S. P. CULLEY.

Red clover with short corolla-tubes, bees with very long tongues, and bees improved as to industry, energy, capping, non-swarming, etc., are things desirable of attainment; but how long will it take to accomplish given results? is an important question.

"Uncle Lisha" writes many very plausible and interesting things about what has been done by selection; but he has not yet discussed the time factor. He speaks of pigeon-skulls, page 615, and says there is a variation of nearly an inch. True; but to get that variation has required hundreds of years of selection. See?

Meditating on the time factor in the red-clover problem, I decided to write to Mr. Burpee, one of America's leading seedsmen. I asked him how long it took to produce Burpee's bush lima bean from the pole lima, etc. Mr. Earl replied to my questions as follows:

> Mr. Palmer, with whom the Burpee's bush lima bean originated, worked on the variety for a period of about four years. We do not know from whom you could obtain a strain of red clover with a short corolla, and think that this could be procured only by means of very constant and careful selection.
>
> W. ATLEE BURPEE & Co.
> Per EARL.

Now, it appeared to me when I wrote, that, to change a vegetable so "set" in its ways as the pole lima bean, from the vine to the bush form, was a greater task by far than to shorten the tubes of red clover. I was much surprised, therefore, that the change had been effected in the brief interval of four years. As red clover is a biennial, while the lima bean is an annual, it would be proper, perhaps, to allow eight years equal to four. So, according to this suggestion, we should be able to get short-tubed red clover in eight or ten years. This would seem to cross Mr. Hasty's idea, page 681, that "five years or ten will be only a circumstance in it;" but in the same article Mr. Hasty gives it away that he actually succeeded in finding a red clover that "seemed to be pretty much all one could ask, gained at one leap." The trouble was, his "prize" proved to be a shy seeder. In other words, he succeeded, except in getting seed, and succeeded in "one leap." Mayhap the next diamond will not have this "lamentable shortcoming." I wish he *would* "try those three seeds for all they are worth." I wish he would cross the flowers of one plant with some prolific-seeding long-tubed plant. The result of such a cross *might be* a short-tubed clover that would seed freely.

By the way, this is a work for the specialist. Working with fruits, there is Mr. Burbank, "the wizard of horticulture." He plants 50,000,000 plum seeds, crosses and re-crosses "every-which-a-way," gets 20,000,000 "new creations" in plum varieties, a few of which prove veritable prizes, worth $3000 each. Then there is Mr. Burpee, or the men who sell him their results. Look at the wonders they perform in the vegetable kingdom. Now, if we bee-keepers properly present our case so as to convince some of these experts and specialists that there's money in producing the red clover of the future, we shall soon have what we want. Who will furnish a basis to estimate the cash value to the originator of red clover with a short corolla?

"Improvement is the order of the age." We feel sure it will be easier to originate a red clover with short tubes than to lengthen bees' tongues to reach the nectar in our present red clover. We base this on the idea that at present red-clover tubes are more than twice as deep as a bee's tougue is long. To double the length of our bees' tongues will require about a century, if it can be done at all.

Would the farmers sow short-flowered red clover after it is originated? At present the first crop is cut for hay, as it is practically seedless. The short-tubed variety would bear seed the first crop as well as the second. Clover hay with seed in it is not desirable, as it causes horses to slobber, and is otherwise an unwholesome feed for stock, especially horses. Would our proposed new clover be tabooed on this account, or could that be overcome by earlier cutting?

We should spare no pains to improve our bees. Securing longer tongues is not all of bee improvement by far. The difference between black bees and Italians does not arise from differences in tongue-lengths so much as a difference in energy. This may be proven during any strong white-clover or basswood flow. Given a colony of blacks and one of Italians of equal strength during a flow easily accessible to both, and the Italians, by reason of superior energy and industry, presumably, will far outstrip the blacks.

It seems a pity that the Cyprian energy should be lost. Extensive experiments should be made with Cyprian crosses. If we could get a strain of bees combining the good qualities of Italians and Cyprians, especially retaining the remarkable energy of the Cyprians, such a strain might form the working basis for "the coming bee."

Higginsville, Mo., Sept. 10.

Later.—Since the foregoing was written we have received a letter from Mr. H. H. Hyde, who seems to have been conducting some experiments in crossing the races, with satisfactory and perhaps substantial results. We quote from his letter:

> We have found that the very best bee for business was a cross between Holy Lands and Italians. Queens from pure Holy Land mothers mated to golden drones are our preference. . . . This is a superior cross. We will stake our reputation on them as being the finest comb-builders, the finest bees to build up in the spring, etc., in existence.

Now, this, in my opinion, is work in the right direction to accomplish results in bee improvement. If cross-pollination, or crossing, accomplishes such wonderful results in the vegetable kingdom, why may not crossing the races of bees prove an effective means of bee improvement?

What is wanted (in addition to "selection") is to proceed in accordance with established laws and principles of scientific breeding till we get combined the energy and industry of the Cyprians, the honey-gathering ability of the Cyprians and Italians, and the prolificness of the Holy Lands, with the gentleness of the Italians, the beauty of the goldens—till we get these and perhaps other good qualities combined and blended into an *established* race. This may be done point by point; slowly but surely it may be done, not all at a bound. When done we shall have the *Apis boom-lifica perfecto-dorsata* and no mistake, which may be called by a shorter name to be selected later.

It looks as if we should need some man on "desert island" to do the *establishing*, else we shall keep on getting more mixtures. You are just right, Mr. Editor, in wanting contributions from men who have "done things" in improving and changing other animals. Such information will be of great value to would-be bee-improvers, and enable them to work intelligently.

[Our friend Mr. Culley has perhaps, possibly, hit upon the proper solution of the problem; namely, that we should engage some seed-grower to perform what may be impossible to those of us who have had little or no experience in this line. It would then remain for us to put up a prize for the one who will produce a red clover having corolla-tubes with a quarter-inch-depth hole, say of the present red clovers. The A. I. Root Co. will give a substantial reward to any seedsman or any one else who will produce seed from which the short-tubed clovers can be grown, and which will not backslide into the common species, and, moreover, will guarantee an almost unlimited market for the seed of such clover at good prices.

But it was Dr. Miller, or at least some one, who lately spoke of the fact that, even if we did get one variety of short-tubed clover, our bees would go right in and mingle the pollen of the red and short-tubed varieties, with the result that the next crop of seed would grow a long-tubed clover. If we grow the one variety our neighbors would be almost sure to grow the other. Here is a little mountain in the way. If one were to attempt to grow short-tubed clovers he would have to get all his neighbors to raise the same varieties, and here again we might encounter the difficulty that we have already experienced in regard to alsike.

I am not sure after all but the problem would be easier solved by stretching the tongues of your bees.—Ed.]

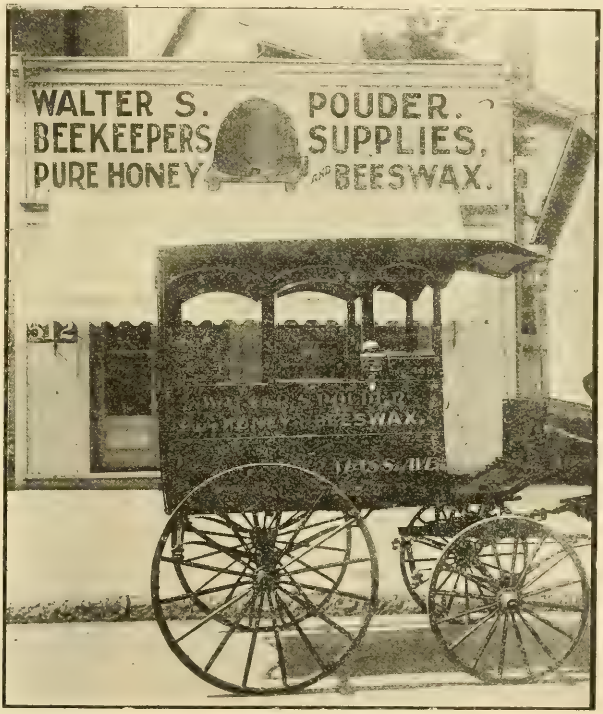
* * *

SELLING AND BOTTLING HONEY.

A Few Valuable Hints very Tersely Set Forth.

BY WALTER S POUDER

A producer can dispose of a good portion of his honey crop to friends and acquaintances without the least trouble; but when it comes to selling to strangers the trouble begins. A druggist looked at my sample jar of extracted honey, handed it back with the remark, "I can make it just like that; but if you will color it a little more it will appear more like old-fashioned honey." His advice went in one ear and out of the other; but Mr. Druggist has since become a good customer. A grocer handed back my sample jar with the remark, "We do not handle that adulterated stuff." I am always pleased to hear a grocer say that he does not handle adulterated goods, and I made this man a present of my sample. He is now a good reliable customer. There are times when one feels inclined to walk out and slam the door; but if you do, you were not cut out for a honey-salesman.



If there is a secret in building up and holding a trade in extracted honey it is in putting up only one grade of best quality of honey. The masses think that all honey should taste alike; and if they get a jar of clover honey, and next time get a jar of basswood honey, they will suspect that something is wrong. When one is constantly having arrivals of different lots of honey, this may seem difficult. I overcome this by using a tank holding 1000 lbs., and this tank is filled by emptying, alternately, 60-pound cans of clover, wild-raspberry, and basswood honey. (I hope the day of putting honey in barrels is past.) From this tank I fill my jars, which are then placed in a hot-water bath, and heated to about 190. Corks are sunk about $\frac{1}{16}$ inch, and half a teaspoonful of hot wax on the corks seals them so that they are safe from granulation for many months. A tinfoil cap and a neat label, and they are ready to deliver.

I have never tried house-to-house soliciting, my trade being principally in the wholesale way; and yet quite a retail trade has been established at my storeroom. The big syndicate stores have taught the people to want almost every thing delivered. For this I use a light spring wagon, which has proved to be a great convenience, and the best local advertiser that I have ever found.

Indianapolis, Ind., Sept. 5.

[Your wagon is almost identically the same as that used by W. A. Selser, the honey-man of Philadelphia. There is no doubt that an attractive wagon as well as attractive goods is half the battle.

In bottling the honey I note that you say that the jars are subjected to a temperature of 190. If the honey also in them is brought to that temperature is not this degree a little higher than need be? 180 is generally the limit set for liquefying or for heating ordinary extracted honey. It always seems to me that, in heating higher than this, its delicate flavor is impaired slightly. The higher the temperature, the greater the impairment of the flavor. A domestic, a few days since, in our house, heated some very fine honey to the boiling-point. She had never been instructed in the matter; but when the same was placed on the table it was several shades darker in color, and a good many degrees poorer in flavor. I have noticed this many times before, when honey is heated to only 180 degrees it is very difficult to detect any loss of flavor, and the average consumer would probably not notice it at all.

This question of bottling honey is not so very well understood by the general bee-keeping public, and I would be willing to pay $10.00 for the best article on this subject, and $5.00 for the second best. Perhaps our friend Pouder will essay to go into the subject a little more thoroughly. If so, will he explain why he puts the jars into a water bath heated to 190? Why not heat the honey to that temperature, and then put it into the jars cold? There must be some good reason for the course, and I should like to have him tell us more about it.

From some things I have seen and picked up here and there I have ascertained it is very important to have the corks sealed with paraffine or beeswax. In some cases the corks are dipped into the hot waxes before they are pushed into the bottle. Some bottlers are so particular that they will not only dip the corks and wax the tops, but cover them with tinfoil. The latter adds greatly to the appearance of the package, and at the same time makes a more perfect sealing.—Ed.]

FEEDING BEES.

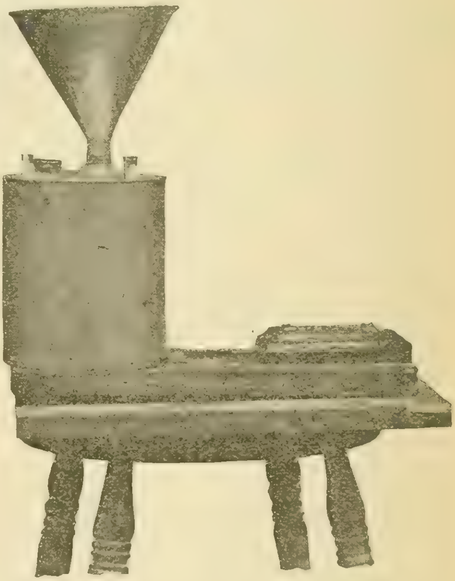
Transporting Syrup to Out-apiaries, and Feeding the Same to the Bees; a Practical Method.

BY J. F. CRANE.

The season of 1899 proved to be the worst for the bee-keepers of Western Vermont for nearly forty years. Thirty-four years ago there was, perhaps, not much more honey, but there were but few bees kept at that time, and the results were not so marked. In 1899, in the towns bordering on Lake Champlain very few colonies stored any surplus, and scarcely one in a hundred gathered enough to winter on. The great question with bee-keepers was not, "Which is better, a tall or a square section?" or "What is the most desirable super or hive?" but "What is the best method of getting bees in shape for winter?" As feeding seemed to be one of the most important considerations, a few thoughts on the subject may not come amiss for the benefit of bee-keepers in other parts of the country.

As we usually have little honey in this section after July, most bee-keepers have need to feed more or less every year; so we were not altogether unprepared for the past year's experience. Indeed, I have all the necessary implements for feeding constantly on hand; and as we are all apt to think our method the best I thought a short description might not come amiss.

If I were beginning new I might commence with the Miller feeder; but as I have enough tin feeders already on hand I doubt if it would pay to change. Besides, there are some advantages that tin feeders have over the wooden ones, I think, as they are, it seems to me, lighter for their capacity, and more convenient to transport from one yard to another. Besides, when filled and inverted over the frames the feed is nearer the combs than in any style of wooden feeder, which seems important in cool weather in autumn.



CRANE'S FEEDER.

The feeder I use is a modification of the old pepper-box invention, and of two sizes — one holding 9 lbs., and the other 6. The illustrations give a very good idea of them. It is a simple tin can with small holes punched with an awl in one end, with a screw cap on the same end for filling, and two short legs of tin to come as high as the screw cap for the can to stand on when inverted over the bees or brood-chamber.

"But, how do you tell when they are full?" some one asks.

Just this way: Place them on a scale, and when full the scale comes down — simplest thing in the world!

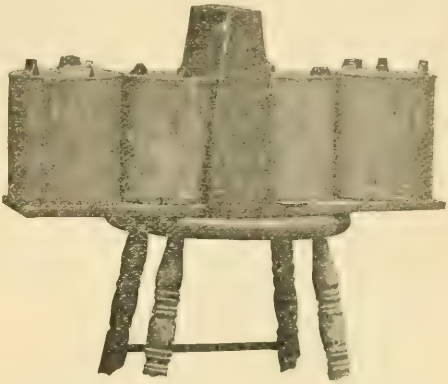
I melt my sugar on a stove in my honey-room, adding 1 lb. of water to every 2 lbs. of sugar. To prevent granulating I use or add liquid honey, if I have it to spare, something after Doolittle's formula; but last season we did not have it, and I did as some of our best bee-keepers here in Vermont have been doing for some time — I used cider vinegar instead. The rule is, one tablespoonful of vinegar to each 10 lbs. of sugar. I found that half this amount, if the vinegar was sharp, answered very well. While it changes the flavor of the syrup somewhat, it does not taste perceptibly acid, and the bees seem to like it quite as well —I am not sure but better.

I usually melt up about 2½ barrels of sugar in the forenoon, pouring it, as fast as made, into a galvanized-iron tank holding about 800 lbs. This tank is rather flat, or drum-shaped; and, while only about 2 feet high, it extends nearly across my wagon-box, and rests on a wooden bottom made of boards, and cleated at the ends, so that, by prying up the end of the bottom and putting a roller under it, I can draw it to the rear end of my wagon-box to draw off the syrup. Of course, there is a honey-gate near the bottom of this tank, toward the rear end, for this purpose. On top of the can, near one edge, is a screw cap for filling, and in the center of the top is a cone-shaped tube four or five inches high, with screw cap fitted for the escape of steam when filling, and also when moving to outyards if necessary. If such a tank is full, not much steam seems to generate; but if only partly filled, the motion of the syrup generates a good deal of steam and causes strong pressure; and if the can is not pretty strong, or if there is the smallest leak, a part of its contents is liable to be on the outside when it reaches its destination.

I formerly used a pair of iron scales; but as they were heavy and inconvenient to transport to outyards I have made one or two of wood that work very well, and this is the way:

Take a piece of wood, say 8 or 10 inches wide by 15 or 18 long. About 5 or 6 inches from one end make a saw-kerf across the board ¼ or ⅜ deep. In this, place a piece of hoop iron firmly so the edge of the iron will come ½ inch above the face of the board. Now take another board, 6 inches wide, and as long as the first, and 6 inches from one end make a V-shaped groove across it to rest in the upper edge of the hoop iron. Now nail a cleat (it may be thin and narrow) to keep your can in place, and another cleat to keep your weight in its place when you have found by testing where it is. For this weight I use an old flat-iron that has lost its handle; but any thing else can be used as well. Thus you have a pair of scales that will work very well, at a cost not to exceed ten cents, like one on which I have weighed a great many tons of syrup. I build a platform at the rear of my wagon to set my scales on, with one man to unscrew the caps and hand the feeders and take them away, while another, with his hand on the gate of the tank, draws off the syrup. In this way 1000 lbs. can be drawn off in an hour's time, and in another hour distributed to the hives that need it. As the feeders are drawn off they are usually placed in a large box to keep them warm; for I like to feed the syrup warm, as it quickly arouses the bees and facilitates removing it to their combs.

In removing the filled feeders to the hives I use what I call, for the want of a better name, "carriers," which consist of a simple board, say 6 inches wide by 2 feet long, with a handle made of two half-inch strips nailed on each side of the board, and to the end of a cross-piece at the top. It is placed at the middle, of course, to balance the load. A man can walk off with two such, thus carrying 70 lbs. or more at once. The illustrations show both the carrier and scales as well as the feeders. The one on the scales has a funnel in, ready for filling.



As I have already stated, I use two sizes of feeders — one holding 6 lbs., and the other 9. In feeding I can use one size or the other as I need. For instance, if I want but 6 lbs., give one small feeder; if 9 lbs., one large feeder; if 12, two small ones; and if 15 lbs., one large and one small six-pounder, and so on. By this method of feeding, two men or one man and a boy and a horse can feed 800 lbs. of syrup a day to a yard of bees many miles from home.

I usually find most of my feeders empty in 24 hours, so they can be used day after day, over and over again, till the close of the season. I have fed some colonies the past year over 30 lbs. at a feed, to find nearly or quite all gone the next afternoon.

Middlebury, Vt.

[You have your method of feeding elaborated into a system that certainly economizes labor. I have been wondering why you used the flat or shallow storage-can for transporting the syrup by means of the wagon. A tall round can would be cheaper to make. You doubtless have a reason, and we should like to have it.

If you use 1 lb. of water and 1 lb. of sugar you will have a thinner syrup to start with, of course; but it will be much more thoroughly ripened by the bees, and make a much better feed for them, because the bees, in the language of the chemist, "invert" it or make of it a substance having some of the characteristics of honey, but not the same article; but they will not invert one-to-two syrup. By using the proportions half and half it is not necessary to use acid, honey, or any thing else to prevent granulation. We have for several years back used such thin syrup, and now would use no other. All that is necessary is to pour the requisite quantities of each into the extractor-can and turn the reel until it is thoroughly mixed. This can be done at the outyards, thus saving the carrying of water. We find that we get better results from colonies fed half and half than when fed one part of water and two of sugar.

If you, friend Crane, will try it next year, I feel confident that you will ever afterward use the half-and-half proportion.

Formerly, when we fed 2 lbs. of sugar to 1 lb. of water, we had more or less granulating in the combs. The granules would form, and the bees would carry them out and drop them at the entrance. This is now all done away with; and, besides, the labor of making is very greatly reduced.—Ed]

BEES FROM TEXAS TO CUBA.

The Success of the Venture; a few Plain but Interesting Facts Concerning Bee-keeping in Cuba; Bee-diseases and other Troubles.

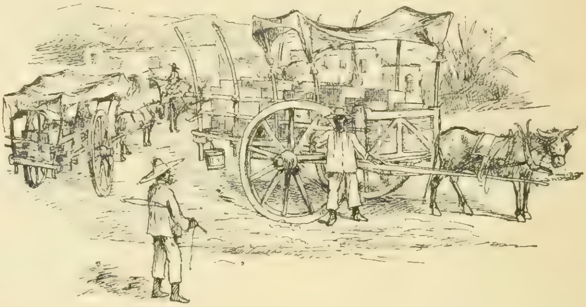
BY F. H. SOMERFORD.

Concluded.

In the afternoon the city of Havana stood out before us, and we were soon drawing down on Morro Castle; and glad I was, having spent four days and a half in this miserable old stock-boat with the bellowing of crippled bulls, braying of kicking jacks, and snorting of mustang ponies, and the desperate hum of smothering bees, that did no harm whatever to their other wild companions.

The discharging of the stock was begun, and continued till late in the night, and resumed early next morning, till by noon nothing remained aboard except the bees, which were purposely left till the last. A barge of cattle was tugged away. This is a miserable plan of discharging a cargo; but steamers here must anchor out in the channel, and unload by piecemeal. From the decks of the steamer to the floor of the barge, which is no more than two or three feet above water, is a terrible descent for stock that have endured so much hardship. At first it was only about six feet, and the stock were driven down the ill-made chutes, the weak ones rolling head over heels, or any old way, and the steamer gradually rising till it was 12 feet above the barge, giving the poor weak beasts a terrible descent; but such little things are unnoticed here, where cruelty to both man and beast has been the rule of the departing power.

By afternoon all was ready, and bees were handed down a step-ladder of human hands to the barge, soon tugged away, and I bade a hearty farewell to the ship. Arriving at the wharf, the bees were soon placed thereon amid a crowd of open-mouthed wonderers; large mule-carts were near by, waiting to take the bees away. They were soon loaded on, fifty hives to a cart, and rolled away to the stables of cart-men to start on their twenty-mile journey out to this place some time after midnight.



The evening fast drawing to a close, stopping at a hotel I was soon seated at a table well laden with Spanish "municiones de la boca." The seasoning was rather strange to me; but, not having been too well fed on the boat, I managed to take care of a little.

Rising early for the daylight train out to this place (Bejucal) I soon found myself surrounded by some pretty country, palms everywhere to be seen, giving an ancient charm to every thing.

Arriving here I was soon busy searching for a desirable place for my bees. Going back a mile from town on the graded road from Havana I found where I could get a small place of shaded ground, an acre or less, for $100 a year, which seemed rather high to me. Looking around for two hours I found a tolerably good place a quarter of a mile back from the highway, where I could get a piece of ground with some shade, 70 feet long by 30 wide, for two ounces of Spanish gold per year. To accomplish this, or any thing else here, one has to have an interpreter if unfamiliar with the Spanish, as I was. Going back to the road I waited for the carts with bees, which came a little later. Directing them to the orchard I soon had the hives placed in rows, but noted, in handling them, that many seemed to be terribly calm within. Later on, after opening them up I saw that, out of the 200 colonies, I had only 76 left. The empty combs were filled with web-worms before I could get the bees straightened, and a great many were ruined. They kept me busy for two days hiving them, caging their queens, etc., as they did nothing but swarm out and ball queens for that period of time. After this they went to work, it being the 8th of October, and some early flowers in bloom. On looking around over the country I found 600 or more colonies of Cuban bees within a league of me, in four different localities. Inquiring around I learned that bees sold here from three to five dollars per gum. I got every thing ready, and bought 50 colonies, transferring them. I soon had my apiary increased to 125 colonies, which now kept me tolerably busy, it taking much more work here for bees than in Texas, owing to the fact that web-worms thrive for twelve months in the year. Ants crawl unceasingly, which are more abundant here than anywhere I've ever been. There are three small varieties that are especially fond of hives, which makes Cuba all but a paradise, together with three varieties of web-worms and three kinds of foul brood or brood disease (I say three kinds, because I've seen these; some of my friends, American bee-keepers, say there are more than three classes); but I've seen brood affected thus: The larva turns black on the head, and slowly dies at any stage of development, but most frequently just before being ready to cap, but often younger; and, again, after being capped, and nearly ready to hatch, if the disease overtakes a bee at this stage it simply dries out, remaining in perfect form, dry and hard. If it dies in the larval stage it sinks down, a watery grayish-white mass, always remaining watery for some time, then drying to a hard cake in the bottom of the cell, but never becoming ropy. The other kind that kills the brood in nearly the same manner becomes more of a solid color, and, when broken by touching with a stick, forms in many little ropes clinging to the stick, and stretches as the stick is withdrawn. In the third variety the brood becomes a powder, a shade darker than yellow ocher. The bees soon drag it all over a comb, and all is soon infected.

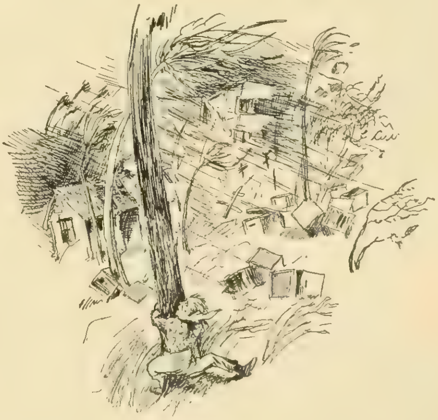
The first-mentioned disease is in every apiary and every log-hive ranch in this part of Cuba, and, I believe, in the entire island. Colonies large and strong can usually overcome this disease; but when weak it makes rapid strides toward their destruction.

The second variety is not scattered everywhere now, as I am informed it was before the war, it having taken hold and destroyed one by one many of the best ranches in Havana Province, which fact is evidenced by the pile of empty hives in the Agricultural and Mechanical College grounds, at the fine Casanova ranch at Jaruco, a ranch at Guanabacoa, and several others, and is now doing its work with some other ranches that I'll not here mention.

The third disease, as far as I've learned, seems to be a new comer. I was in an apiary some 20 miles from my location some three weeks ago, where the proprietor had a great tank of combs in soak to render into wax later, they being well filled with this powdered larva. He showed me other hives he was watching and experimenting on that were just becoming infected. Of all the diseases he had seen, this destroyed quickest.

Returning to the subject, my bees produced, after buying the 50, which increased my ranch to 125 hives, 950 gallons of honey, or an average of 76 lbs. per hive. I did not extract from all the hives, though, for some never got ready in time. Thus you see my results were no better than I obtained in Texas, where I could produce honey at a great deal less cost than the same amount produced here. I find it here as in the States—one always hears of some one else doing great things. This hearsay plan kept my ambition up for some time in Texas, but I am afraid it won't do so well here, because I hear of others doing much worse than has been my lot I increased in spring up to 250, of which I have lost 30, and have been feeding too. I have fed nearly 150 gallons of honey. This will carry my bees another week, then I will buy sugar to feed on for the next month and a half, or until the 15th of September. I am told that by that time the bees can obtain their own living.

I became discouraged day before yesterday, having a nice little hive abscond. I mounted my wheel, and went down to where a friend has an apiary of 350 hives, who was feeding sugar when I was last there, some five weeks ago. I found him still at the same trade, feeding three sacks of sugar a week. We swapped troubles, which is always some satisfaction, it being a long-established truth that "misery loves company." While with my friend he had one hive leave. Returning home in the evening to feed my bees I found that I had lost one hive that day also. I have decided that other things are to be found in Cuba besides "milk and honey."



Feeling it my duty to give your readers my entire experience here, and finding, after reading my article over, that I had failed to tell of the cyclone, I therefore beg to add the following:

This being the rainy season, we've had a shower, a rain, or a flood, almost every day for two months, the rain coming from any direction, and under various conditions, often preceded by terrible winds, one of which struck my place some five weeks ago, coming down the valley from above, blowing one of my sheds to pieces, under which I have my bees, overturning several hives, besides blowing one end of my house down, and blowing down a dozen or two banana-trees. I was told by the Cubans, though, that another such storm might not strike this place again for twenty years. With this sickly encouragement, and a hope for better times, I procured help, and at some little cost and work I had things right again in a few days, losing only two hives entirely from the blow, besides a few others half drowned by the rain that followed the storm.

Bejucal, Aug. 1.

[It would pay any of our readers who may be contemplating going to Cuba for the purpose of carrying on bee-keeping to read this article very carefully. While, doubtless, some have gone there and "struck it rich," I know of a number who have achieved any thing but success.

We have heard from other sources of the prevalence of bee-diseases in Cuba; and I hope that some sort of law can be passed soon by which every one who keeps bees shall be compelled to treat or destroy affected colonies.

The first disease Mr. Somerford speaks of, and which he says is in every apiary on the island, I should judge was pickled brood. The second one, from the description given, I should say was foul brood, and the third one is probably black brood. While the description does not tally exactly, for the last named as we find it in New York, yet it does in some respects; and from the fact that it is a newcomer it would appear that it is the regular black brood. Harry Howe says he has found this disease in Cuba as well as foul brood; and as he is somewhat of a microscopist as well as a bacteriologist he is in a position to know. —Ed.]

NOTES OF TRAVEL IN EUROPE.

Continued from Last Issue.

BY J. T. CALVERT.

We spent the most delightful week of all our trip in Switzerland in sight of its snow-capped mountains and its superb lakes whose waters are not like any other I have seen in all my travels. The ice of the glaciers, when seen in the mass from beneath, is of a beautiful sea-green color, and all the Swiss lakes partake of this same distinctive color. There are a variety of shades of green, from the dark-green firs on the mountain-sides, the lighter green of the grass, to the bright-green cast of the charming lakes. The snowy peaks, set between the nearer peaks covered with green, make a charming picture that you never weary of looking at.

Leaving Geneva early in the morning we arrived in Paris in the evening, after a long day's ride across a diversified country. Much of the country passed through in France was rather poor and stony, and used as grazing land. We passed rich farming land bearing heavy crops of wheat and oats and numerous other farm crops. In all our travels we did not see a field of corn, which seems to be truly an American crop. More farm machinery was seen in France than in any section we had gone through yet; but it was not until I reached Scotland that I found the most advanced farming seen anywhere abroad. Through some sections of England some of the modern binders may be seen; but in Scotland they are quite common. These machines in use over there are mostly of American manufacture. There are home-made reproductions which are preferred by some because of the greater ease of securing repairs, or a patriotic desire to encourage home industry. I found, as a rule, this latter feeling was not strong enough to resist the temptation continually presented, of being able to secure for less money better goods of American make. There is no question but the United States is rapidly finding her way into the world's markets, and she will find these markets sure and secure in proportion as she makes an honest effort to supply goods of intrinsic worth, and adapted to the changed conditions found abroad. Some of the first harvesting-machines sent over were entirely too light, and would not stand the strain in the heavier crops on the rich land of England and Scotland. Why, I was told that in the region of Dundee, Scotland, five to eight stone per acre of wheat is considered an average crop. There being 8 bushels to a stone, that means 40 to 60 bushels per acre. In our section of Ohio the farmers consider they are doing very well with half that yield. In what are known as the fen lands in Central England, there are large tracts that are lower than the level of the sea, and are reclaimed by confining the rivers in dykes or embankments, draining the land and pumping the water from the drains into the rivers. Flood-gates are provided at the mouth of the rivers, which allow the waters to flow out at low tide; and when the tide rises they close, thus preventing the sea from flowing in. These fen lands grow very heavy crops of all kinds, and enable the farmers to pay a tax of $1.00 an acre or over for maintaining the pumps, besides $8 00 to $10 00 per acre rent for the land, as well as other dues for maintaining stone roads, established church, etc. I was convinced that the burden of taxation on the American farmer is as nothing compared with that on his brethren on the continent. The usual rent of a farm in Ohio is less than half that paid in England, Scotland, or Ireland. In spite of their much heavier crops, they have all they can do to live and meet the numerous burdens upon them.

It is the very rare exception to find a man tilling his own land. Almost universally the farmers are tenants who do not own the soil they till. In spite of all this, they take life easy compared with the average American. Nine hours is considered a day's work, and even that short space of time must be broken two or three times to eat. Few people have less than four meals a day, and many have a fifth. Even in shops and factories it is the rule for the men to work for an hour and a half, then stop for breakfast. After putting in about three hours and a half more they have dinner. After dinner they work four hours, thus finishing the day.

Another custom that is quite universal is a

Saturday half-holiday. This custom is quite common with us during the summer months, May till October; but in England, I am told, it holds the year through. As a rule they take life easier, and get more enjoyment out of it, than the average American citizen does in his mad rush to get rich and lay up a competence.

I spent a day in the south of England at Ripple Court, near Dover, with F. W. L. Sladen, who is an enthusiastic bee-keeper, and collector of specimens of bees of all species and varieties, and he has indeed a collection to be proud of—humble-bees (or, as they are sometimes called, bumble-bees) of many kinds and colorings and sizes; *Apis dorsata*, of several varieties; bees from all countries on the globe. I did not learn how many different specimens he had; but I should judge from the number of specimen-cases we examined, and the number displayed in each, that there can not be less than 500 different specimens, with very few duplicates. Mr. Sladen is still collecting, and anxious to exchange specimens with others who are making collections, or to receive specimens from any source. He is especially desirous of securing more specimens of American humble-bees, as he has very few of this class in his collection. He has several small hives of humble-bees which he is cultivating and experimenting with.

The main source of honey in this part of England is from sainfoin. Lucerne is also grown, but it does not yield honey, no doubt because they do not have the proper atmospheric conditions for its secretion. Mr. Sladen has over 100 colonies of bees in two apiaries; had taken over a ton of honey, and is getting at wholesale something like 18 to 20 cents per pound. I find, however, that the English bee-keeper prepares his honey for market much more elaborately than we do in America. Extracted honey is usually put into pound bottles, and neatly labeled with the name of the producer; and if he is a member of an association the association label is also added, which does not guarantee the purity of the honey, but the character and good standing of the producer. In this form extracted honey brings nearly the same price as comb, and it is growing in favor. Comb honey is invariably put into cartons of some kind, and they are usually a much more elaborate kind than those common with us. The standards set for the shows require glass both sides, with a lace-paper fringe of a certain depth all round the edge of the glass, the four sides being of pasteboard or tin. Much is also put up in ordinary pasteboard boxes, neatly labeled. There is always a good market in England for honey, and the quality of much that I saw seemed below the average American honey. There ought to be an excellent outlet in Europe for all the surplus honey produced in Cuba, Jamaica, and other West Indies, without any of it finding its way into this country to lower the price of our product. In fact, in good seasons it should be possible to export our surplus at a profit rather than see our market go so low. One thing, however, will not be tolerated; and that is, shams or adulterations; and the United States has lost prestige in Europe in a way that it will be very difficult to regain, because of shams and adulterations in the way of filled cheese, bogus butter, poor meats, as well as adulterated honey. If a producer were to make good connections with distributors in England he might often find a good outlet for a surplus.

The honey crop of Great Britain was cut short, and it is considered a very poor season. The demand for supplies stopped almost entirely in June, while it usually lasts through July and August. As a consequence, most of the dealers have considerable stock to carry over till next season. The sections used in Great Britain are either 1$\frac{15}{16}$ or 2 inches wide, and either two or four beeway, about equal quantities of each width and style. The no-beeway has not made much headway as yet, owing to some unfavorable comments of some of the leading writers in the *British Bee Journal*, together with the naturally conservative temperament of the people, making them slow to take up with new ideas, no matter how good or meritorious in themselves. It is worth mentioning in this connection that the first and second prizes awarded for sweepstakes at a pure-food show which it was my privilege to attend in London, just before leaving, was given to bee-keepers who use the no-beeway sections, and showed them in the exhibits which captured the prizes. These two producers in the vicinity of London are Mr. Seymour, of Henley-on-Thames, and Richard Brown, of Somersham, Hunts. They, as well as others who have tried the no-beeway sections, are satisfied of their superior merits in spite of the disparaging words of prominent writers.

I had a pleasant interview with Mr. Brown, and he was loud in his praises of the no-beeway sections. He is, by the way, a wide-awake bee-keeper, ever on the alert for a good honey-pasture for his bees, and ready to move them several times a season as need requires, to secure a profitable yield of honey as a reward for his care and labor.

One of the chief sources of honey in Scotland and north of England and Ireland is heather. This little shrub with its profusion of purplish-pink bloom gives the mountains a ruddy, warm appearance, in spite of the cold wind that often blows amid the highlands. Heather honey has a reputation all its own, and it seems to be an enviable one too. It strongly resembles buckwheat honey, not only in appearance, but somewhat in flavor. The honey is a dark amber color, and the comb is very white. One quite remarkable peculiarity of heather honey lies in the fact that it can not be separated from the comb by the ordinary honey-extractor, but must be pressed out, thus destroying the comb for further use except to melt up for wax. In view of the very thick honey thrown out of the combs in the dry climate of our Western States, I could scarcely credit the universal impression that heather honey could not be thrown out of the comb with a good extractor; yet I had no means of disproving it, and was obliged to accept it as a fact. Presses of various patterns, and in considerable quantities, are sold for the purpose. In view of the destruction of the comb necessary by this process I inquired why it was that the honey was not universally sold in the comb, to which came the reply that they felt obliged to supply it in the form that it was wanted, and there seemed to be a better demand for the liquid than for the comb, even at the same price; besides, a good article of liquid honey could often be secured from combs that were not in merchantable shape, so the honey-press seemed to be a necessary article in the equipment of a heather-honey producer.

There seem to be very few in Great Britain who make bee-keeping a specialty, and who therefore keep a large number of colonies of bees. The great mass of bee-keepers are those who have one or two to six or a dozen hives, and keep them either as a pleasant diversion from business or professional pursuits, or to help out the family store of delicious sweets. The requirements of such bee-keepers in the way of supplies differ quite materially from those of the specialist or large bee-keeper—a difference that we have scarcely made enough of in America. If there is not already a large number of bee-keepers of this class in the United States there ought to be, and more consideration should be paid to him, not only in appliances but in the literature of the periodicals, or at least in the bee-departments of the agricultural press.

It was my privilege to attend the international convention of bee-keepers in Paris, and to meet in person some of the distinguished representatives of the bee-keeping fraternity, not only of the European countries, but from Chili and Japan, as well as from America. The proceedings of the convention were conducted in the French language; and as I do not know French I will leave to our other American delegate, Mr. C. P. Dadant, who is a Frenchman as well as a loyal citizen of Illinois, the task of reporting such of the proceedings of the conference as he considers important. I must acknowledge my indebtedness to Mr. Dadant, who proved so valuable an interpreter for me at such a gathering.

CONVERSATIONS WITH DOOLITTLE

COMB AND EXTRACTED HONEY FROM THE SAME APIARY.

"How do you do, Mr. Doolittle? I came over to see if you think it well to produce both comb and extracted honey in one apiary, or shall I divide the number of colonies I keep into two yards, working one for comb honey and the other for extracted? I wish to decide this matter this fall, so I may be all prepared for action next spring."

"This is a question, Mr. Jones, which often enters the minds of those keeping bees, some thinking that both comb and extracted honey production should not be mixed together in one yard or apiary."

"But what do *you* think about the matter?"

"I see little if any reason why two yards are necessary for a mixed production of honey."

"Please give your reasons why we should produce both in one apiary."

"Some thirty years ago, when I first began keeping bees, I had considerable trouble about having certain colonies work in boxes; and often after a colony had nearly completed a given number of boxes it would swarm, leaving the bees in the hive so weak in numbers that said boxes would remain unfinished at the end of the season."

"That's just my case exactly. What did you do about it?"

"I tried cutting out the queen-cells and returning the swarm; but this seemed to do little good, for in a few days they would come out again, and thus keep up their swarming till the honey season was over, doing little or nothing in the boxes, as bees having the swarming fever will do little else than prepare to swarm."

"Could you remedy this with the extractor?"

"As I had no extractor at that time (very few if any being in use thus early), the only way I could do which seemed good to me was to cut all queen-cells while the swarm was out, cage the queen between two combs, and return the swarm, leaving the queen thus caged for eight or ten days, when all cells were again cut off and the queen given her liberty. As nearly half of the brood had emerged from the cells during this time, there were plenty of empty cells in which the liberated queen could deposit eggs; and as the bees had no larvæ to nurse, the disposition to swarm was broken up, as a rule, and the boxes would be completed."

"This was quite a scheme, certainly."

"Yes; but I wish to say that, during these eight or ten days, right in the very height of the harvest, little or no honey was stored, as queenless bees, and especially those having the swarming fever, are practically good for nothing as comb-builders, and a colony so treated, at this season, was about as good as queenless."

"How about results?"

"The result was, I lost ten days of the best of the honey harvest, during which time a colony, not having the swarming fever, would store from forty to sixty pounds of honey. This was a serious loss, but not as great as to hive the swarm in a separate hive, in which case little save the swarm would be secured. After a little I purchased a honey-extractor, when I found I had this swarming mania, of colonies which should be in better business, practically under my control."

"I never heard of controlling swarming with the extractor when working for comb honey. Tell me how you managed."

"When a swarm issued as we have been talking about, I would extract all the honey from the brood-combs while they were out, removing all the queen-cells, when they would go to work with a will on being returned, generally losing all desire to swarm. Here I had a plan that accomplished the desired result without the loss of ten days of my best harvest; besides, I obtained extracted honey enough to pay me for my time, while in the other case I received nothing."

"But did none of the colonies so treated offer to swarm again?"

"Now and then a colony would not be cured in this way, although nine out of ten would, in which case I would cage the queen, as spoken of a little back, and wait only three or four days, instead of eight or ten, when I would extract the honey again, allowing the queen her liberty, and in this way I never failed in keeping a colony, which had once commenced in the boxes, at work in the same"

"Yes, but sometimes colonies refuse to enter the sections at all."

"In case a colony refused to go into the boxes, being determined on swarming, I took off the comb-honey arrangement and substituted an upper story in the shape of a hive full of empty combs. By raising a frame or two of brood from below into the upper story I was master of the situation, and colonies determined not to work in boxes were made to produce an equivalent yield of honey, by the use of the extractor, equal to those which entered the boxes the most readily."

"Such working of an apiary is news to me."

"The aim of every person keeping bees should be to make all colonies produce an equal value of something readily turned into cash, or of cash value, and the extractor is a great help toward this end."

"Have you any other reasons for using the extractor in the same apiary where comb honey is produced?"

"It often happens that a man has more colonies of bees than he can successfully work for comb honey (which means swarms, taking off sections when filled and snow-white, by going over the apiary once a week, etc.), while by using a part of the number of colonies for extracted honey the whole can be handled by one man, thus saving the wages of an assistant, which would become a necessity, if all were worked for comb honey, or the same number of bees were divided into two yards."

"How could this best be done?"

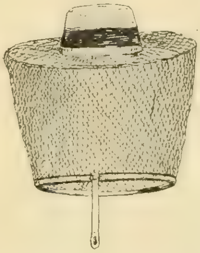
"By setting apart, in the spring, a certain number of colonies for extracted honey and a certain number for comb honey, one man can care for all by tiering those worked for extracted honey before his time is fully occupied with those to be worked for comb honey, after which little attention need be paid to them, except to add another story, should they become crowded for room."

"How about the fall work?"

"After the filled sections are all taken off at the close of the season, then these colonies can be attended to, fixing them for winter; and what honey they do not need, extracted from time to time, as we have leisure, by carrying the same to a warm room, allowing it to remain till it will extract easily. Thus the apiarist can improve all of his time to the best possible advantage—much more so, according to my belief, than he could to have two separate apiaries, one to be devoted to the production of either kind exclusively. But I must be going now, as I have an engagement to meet at this time."

HEADS OF GRAIN FROM DIFFERENT FIELDS

A GOOD BEE-VEIL.



I have been using a veil of my own construction, now for the last two seasons, and with such entire satisfaction that I will describe it here for the benefit of all. Take veiling 24 inches wide by 36 long. Sew the 24-inch sides together; now take a ½-inch-wide elastic, 18 inches long, and fasten on top to go over the hat, and one piece of elastic ½ inch wide by 28 inches long to fasten on the bottom; also one piece of elastic 6 inches long, with a buttonhole on one end. Fasten to bottom elastic, and button on to trousers button, and I assure you never a bee can go inside. Try it and be convinced. M. R. KUEHNE.

Pomona, Cal.

FEEDING SUGAR OR HONEY.

My honey crop is a total failure—so dry this fall that buckwheat did no good. I shall have to feed.

Would you advise feeding honey when it can be bought as cheap as or cheaper than granulated sugar? Would you add any water to liquid honey? If so, how much water to 20 lbs. of honey? If honey were candied, how much water should be added? Would there be any danger of honey again granulating after being fed? Would you fill empty combs and put them in hives, or would you prop up the front of the hives and pour in feed? If the latter, how much feed would you give at one time? Would dark honey be safe to feed? W. D. HURT.

Pleasant Hill, Mo., Sept. 18.

[Whenever honey can be sold at a price equal to the cost of sugar syrup, we would advise selling the honey and feeding the syrup, as the latter is a better feed for winter; but if the honey is already in the combs, and of good quality, I would not extract it and feed sugar syrup in its place. If, however, the honey is to be fed, it should be diluted with water until it would be called a thin honey; but it would not do any great harm if one got the honey too thin or too thick; but, ordinarily, honey fed not thinned down will be more liable to granulate, and that is one of the reasons why it should be mixed with water.

Syrup or thin honey may be fed to bees by pouring it into the combs from a height, and then giving to the bees; but it is a messy job at best, and the bees can do it far cheaper than we can.

As to the amount of feed to be given a colony, that will depend on how late it is in the season, and whether or not we desire to stimulate brood-rearing at the same time. If the bees are short of stores and settled cold weather will set in in a few days, I would give all the feed the bees require, at one time. If the colony be strong, and they have very little food, I would give them 25 lbs. of syrup in a large feeder; or if no large feeder is to be had, use a smaller one, giving the amount in two or three feeds.—Ed.]

Is the honey with which bees fill themselves when smoked a total loss to the bee-keeper, or is it stored in the cells again when the bees become quiet? A. B. Fish.

Hartford, Ct.

[I do not know; but I believe the honey is not, in the majority of cases, put back in the combs afterward. Too much smoking will sometimes cause the bees to uncap the sections. If they do not consume the honey taken out, then the probabilities are they will store it in the brood-combs. If any one can answer this more definitely I shall be glad to have him do so.—Ed.]

BEGINNERS' QUESTION BOX

BY E. R. ROOT

F. H. H., Mich.—I would not feed to bees, for winter stores, honey that is slightly fermented; but you can find a market for it at the large baking concerns. You would probably get a price this year that would more than pay you for good syrup. We would suggest that you send a sample, giving quantity you have, to the National Biscuit Co., Chicago, Ill., asking them to name you price that they will allow you.

G. W. B., Mich.—We would not advise you to kill off the drones, for the bees will kill them off quickly enough themselves after the honey season, if they have a queen in normal condition. If you have an excessive number of drones in the hive at this time of year, I should judge that either the hive is queenless or else it has a drone-laying queen, or one or more laying workers. If there are laying workers, scatter the brood and bees in several other hives. A room upstairs would not be a good place to winter bees. Better put them in a cellar and have the cellar darkened.

W. A. C., Oregon.—The statement in the A B C of Bee Culture means that in the ordinary average flights a bee will go a mile in five minutes, which would be the rate a good fast-driving horse and buggy would make on a common road. I have personally followed bees going at the rate of about ten or twelve miles an hour up the road, for bees will very often fly down or up a roadway because it is free from barriers in the way of hedge fences, trees, and the like. With regard to the weight of bees and the amount of honey they can carry, I would refer you to the 1899 edition of the A B C of Bee Culture. As you may not have that copy handy, I would state that there are about 4000 or 5000 bees in a pound, and it takes about 10,000 bees to carry a pound of nectar; but probably twice this number would be more nearly the average.

F. V., Ga.—It is always a good practice, when robbers have been working at a colony, to close the entrance down so that only one bee can pass at a time. It is true that Doolittle did get 600 lbs. of honey from one hive; but that was some 20 years ago, and it is regarded as a very unusual yield. From 75 to 100 lbs. would be a large yield nowadays in almost any locality. By "spreading brood" is meant the separating of the combs containing brood and putting down between a frame of empty comb for the queen to lay in. This spreads the brood, resulting in a larger increase of bees. For particulars see the new edition of the A B C book, not yet off the press, under the head of "Spreading Brood."

H. Z., Ark.—Entrances to a house apiary should properly face toward the south and east. However, if you build one on the Morton plan I would have the entrances face the east and west rather than the north and south. I would build a permanent building as light as possible, one that can be put upon wheels after it is emptied of the hives, and hauled to a new location. A building 10×20 would accommodate a large number of colonies; and if it is built light it could be easily drawn from one location to another without taking down; but, of course the hives and every thing else should be taken out. I would suggest that you make the inside of the house-apiary exactly on the plan Salisbury does, which you will see described fully in the A B C you have, under the head of "House-apiaries."

A. H., Texas.—We can not explain why your bees carry out pupæ from the combs before they are fairly developed, unless you have moth-worms in the hive. In such case their galleries will extend through the brood, killing some of it, with the result that the little corpses of the pupæ are carried out as you describe. If this is not the case, then the bees must have some disease, or they gather something somewhere that is poisonous; but this hardly seems tenable in view of the fact that the larvæ are permitted to develop to the pupa stage and die. This would point to the presence of pickled or black brood, and you would do well to have a sample or such comb examined by Dr. Wm. R. Howard, a specialist in bee-diseases at Fort Worth, Texas, inclosing $2.00, which is the fee for making the examination.

H. C. A., Ill.—Colonies apparently queenless will sometimes refuse to start queen-cells for the simple reason that they have something in the hive either in the way of a small virgin or laying worker that they regard as a queen. We never knew of a case yet where a colony was absolutely queenless but they would build cells when they were given worker larvæ or eggs. You may, therefore, rest assured that the colony you speak of has something that they call a queen and treat as such.

EDITORIAL BY E. R. ROOT

WHEN TO USE THE OUTDOOR AND WHEN TO USE THE INDOOR METHOD OF WINTERING.

THE beginner will often ask the question whether he shall winter indoors or out. The answer to this will depend upon the weather conditions. If one has in his locality cold weather that lasts nearly all winter, with only now and then a day of temperature above the freezing-point, I would recommend by all means indoor wintering; or if the weather conditions are such that there is a month of cold weather ranging from 10 degrees above to 10 below zero, then a warmer spell a little above the thaw-point, followed by three or four days of weather at that temperature, followed again by freezing weather, such weather continuing clear up till actual springtime, then I would still advise the indoor method. But if, on the other hand, the winters are somewhat open, there being perhaps a month of zero weather, followed by a month of warm open weather, continuing thus through the winter, the bees should be wintered outdoors in double-walled hives. We *may* have in our locality a month of real cold weather, but two weeks is about as long as it lasts at a time, when we will have a general breaking-up, a thaw, and perhaps rains. This will last for three or four weeks, when we will have another cold spell, lasting possibly a month. This kind of weather will continue in alternation till along in April. In such a climate the average beginner will do far better with the outdoor method.

DR. LEWIS AND HIS TREATMENT.

LAST week I called at the office of Dr. J. M. Lewis, in the Rose Building, Cleveland, the specialist to whom I referred on page 774 of our last issue. There was only one correction in the article and footnote that he would have made; and that was, that the eating of meat and drinking of hot water does not constitute *all* of the treatment. I think it is only proper that I should make this correction, as some might start off on the beef and hot water alone, and then, finding that it did not bring about the expected result, would condemn the treatment. There is no doubt that Dr. Lewis has been able to accomplish some wonderful cures. He showed me a letter he had received indirectly from a grateful patient, who, when he came to him in the first place, was in the last stages of consumption. I asked that I might have this letter so I could present it to our readers, and here it is:

> *Mr. Stewart:*—Your letter is received. In reply I will say I took the Salisbury (or Lewis) treatment. I had consumption, both of the lungs and bowels. I had hemorrhage of the lungs about 6 months before I commenced the treatment. About 12 months after I began the treatment my hemorrhage, expectoration, and cough began to grow lighter. I built up very slowly. I stayed right with the treatment—that is, I left nothing undone in the way of the treatment for 2½ years. I was in the lowest stages of the disease. I have *very* good health now. It has now been about 12 years since I was cured. My age is 50 years. I took treatment exclusively of Dr. J. M. Lewis. My advice would be to take of him, as I know he can cure the disease. J. C. GREINER.
>
> Washington C. H., Ohio.

In justice to Dr. Lewis I wish to say that he did not ask me to publish the Holtermann letter, nor has he asked me to publish what is given above. I only feel that the world should know more about the treatment that has effected some wonderful cures—that is both scientific and sensible.

MISS ETHEL ACKLIN AND HER BEE-KEEPING SONGS AT THE CHICAGO CONVENTION.

I take pleasure in introducing Miss Acklin, the little lady who furnished most of the music at our national convention at Chicago. A prominent feature of the recent conventions has been music, usually at the opening of of each session. This music usually consists of solos and chorus songs, the music by Dr. Miller, and the words by Eugene Secor. Although the doctor had made all plans to be at Chicago, during the sessions of the big convention, sickness and death among his relatives prevented his presence. We were at a loss to know how to carry out the musical part of our program; but, very fortunately, Mr. and Mrs. York and little Miss Ethel Acklin, already referred to, came to our assistance. Ethel sang several solos, playing her own accompaniment, greatly to the delight of the members of the convention. She not only sang well but "brought down the house" several times. She is a daughter of Mr. and Mrs. H. G. Acklin, of Minneapolis, a prominent dealer in bee-keepers' supplies, and queen-rearer, of their section of the country.

BARRELS VS. SQUARE CANS; A LIVELY DISCUSSION AT THE CHICAGO CONVENTION.

At the Chicago convention quite a spirited discussion took place between Messrs. York, Hatch, *et al.*, on one side, and Messrs. Pickard and France on the other. The question was, "*Resolved*, That the square can is the only suitable package for marketing extracted honey." Many arguments were presented on both sides, and the discussion waxed warm. The affirmative argued that there was always a loss of honey due to its soaking into the wooden staves of barrels; that the staves would shrink; that the barrels would leak; that they were heavy to handle. Mr. Hatch spoke of having jammed his fingers in handling barrels. It was admitted that barrels were slightly cheaper, but that square cans would deliver a larger percentage of honey to market in good order, and were therefore more economical in the long run. The advocates of the barrel side of the question argued that the cans were very awkward to handle; that two of them in a box were very unwieldy and awkward to lift, making an aggregate of something like 130 to 135 pounds gross; that it was much easier to roll a barrel into and out of a wagon; that it could be ended up without much difficulty where boxes with square cans had to be lifted by main brute strength; that so far as leaky barrels were concerned, square cans, in their opinion, were just as bad. If one of those 130-lb. boxes were to drop it would loosen the solder and let the honey run just the same.

It was developed, however, in the discussion, that barrels could not be used in the West, owing to the very dry climate, and therefore the tin packages were the only thing that could be used. It was also pointed out that poor cooperage was responsible for a great deal of the trouble from barrels. Mr. N. E. France, one of the largest honey-producers of Wisconsin, showed the importance of good cooperage, and of stuff well seasoned. He never had any trouble with his barreled honey shipped to market. Many, he said, seemed to think a barrel should be rinsed out with water before putting honey in it. This is one of the greatest mistakes.

The opinions of two commission men, Mr. A. V. Bishop, of Milwaukee, and R. A. Burnett, of Chicago, were then called for. Mr. Burnett seemed to favor the square cans, and Mr. Bishop, who is right in the heart of the barrel country, did not express any decided preference. I fancy, however, if all the dealers in honey in the country had been present there would have been a large showing in favor of the tin cans.

Every now and then we are receiving barrels of honey almost empty. Our readers already know of our experience, of the honey running out, and on to the bottom of the cars, and how the robbers made things lively for all the railroad men. The honey-buyer of The A. I. Root Co. says square cans should always be used for white honey. If we get it in barrels we have to go to the expense of putting it into cans, because our trade calls for it in that way. Low grades of honey are generally put up in barrels because the bulk of it is used for manufacturing purposes. But the best grades should be put into cans, if for no other reason than that the honey can be sold in large or small lots. Many customers will take one or two cans when they would not take a whole barrel.

HOW TO PREVENT SUGAR SYRUP FED FOR WINTER FOOD FROM GRANULATING; AN INCIDENT AT THE CHICAGO CONVENTION.

I received a mild scoring at one of the sessions of the Chicago convention. It came about in this way: While the question-box was up for consideration the question was asked, "What is the best way to prevent sugar syrup fed to bees from crystallizing?" One or two answers were given, to the effect that a small quantity of good vinegar or some good extracted honey should be mixed with the syrup during the process of making, using one part of water and two of sugar. I was then asked to give my answer, which I did. I used, I said, one part of water and one of sugar. This made a *thin* syrup approaching somewhat the consistency of raw nectar as the bees gathered it from the flowers; that when this syrup was fed to bees it was better ripened, or, as some might term it, turned into a kind of honey. But immediately this raised a storm of protests from Abbott, Mason, White, and Moore. They considered it almost heresy for any one, particularly the president of the Association, to admit on the floors of the national convention that sugar syrup fed to bees could be converted into honey in any sense of the word, and they demanded that he recant, or be "reduced to the ranks." I soon found they were combatting a proposition for which I was not sponsor, and then explained what I meant. Sugar syrup fed thick, one part of water and two of sugar, could not be ripened by the bees properly, and it therefore had a tendency to turn to sugar again. According to Prof. Cook they could not "digest" it as they would thinner syrup fed slowly. According to Mr. Cowan, of the *British Bee Journal*, they could not invert it so well; and according to others, they could not make it into a kind of honey. Mr. Abbott did not care what the chemists or scientists thought.

Sugar syrup when fed to bees he insisted *was sugar syrup still.* R. L. Taylor, who took the floor in opposition to the gentleman, suggested that he was disagreeing with Mr. Cowan, whose paper had just been read, on the chemical properties of honey. "Can't help it," said Mr. Abbott. I finally explained that I had been misunderstood, that syrup fed half and half was *not honey* in the commercial sense, and only indirectly in the chemical sense. I agreed with the gentlemen, that perhaps it was not wise to give the general public the *impression* that sugar syrup could be fed to bees and made into a kind of honey, because some bee-keepers might be encouraged to put out sugar honey, and because such admission *might* give the general newspaper the foundation for another comb-honey canard. When the "smoke of battle had cleared away" it appeared the objectors would be perfectly willing to accept the term "inverted," which term as a compromise I agreed to adopt; but I still insisted that sugar syrup fed *thin* was changed chemically—was inverted—in that the cane sugar of commerce when fed to bees was by them converted to grape sugar. It is well known by chemists that the nectar of flowers is chemically cane sugar; that when it has been gathered by the bees, and stored in the combs, it has been changed to the grape sugar of honey.

This proposition should not be assailed by bee-keepers; for the truth can never hurt us. Here is the point: Honey is the most easily digested sweet in the world, because it can be absorbed by us with little change. Cane sugar, which constitutes three-fourths of the sweets of commerce, is poisonous to the blood, according to Cheshire; and before it can be assimilated by us it has to be transformed by digestion to grape sugar. According to Cook, "If cane sugar is absorbed without change it will be removed by the kidneys, and may result in their breakdown."

Let it be *distinctly understood* that I am not championing "sugar honey," for I have always opposed it; but I do believe we ought to preach the doctrine that honey is distinctly different from any other sweet, that it is more easily assimilated than any other.

OUR $200 RED CLOVER QUEEN AND HER DAUGHTER.

THIS queen is proving to be more of a prize than we at first supposed. Besides the fact that her bees are the most wonderful honey-gatherers we ever had, storing honey right along when other colonies have to be fed, we find them exceptionally gentle. Twice I have seen the hive opened in the morning when the temperature was almost down to the frost-point. The thin board cover was removed with a snap both times, and yet those bees took it without the least sign of resentment. I have seen colonies before as gentle as this, but they were practically good for nothing for honey; but here are bees that can hardly be coaxed to sting, much less volunteer an attack when handled as bees should be.

We have now learned the secret of their great honey-gathering qualities. It exists, as I supposed, in the great length of their tongues. I measured them, and found the length to be so much greater than any thing else I had previously placed on the scale that I concluded I must have made a mistake. I then asked one of our men, Mr. R. G. Calvert, who has been measuring the tongues of bees for me to a considerable extent; and I was both surprised and gratified when he said they were the longest-tongued bees he ever measured—$\frac{21}{100}$—while the average is $\frac{16}{100}$. The nearest approach we have had to this are some bees from J. P. Moore. Their tongues showed a measurement of $\frac{20}{100}$.

I think we may safely conclude that, when there is any particular colony that will gather more honey from red clover than other colonies, the bees of it have longer tongues.

At first I thought there was no very great variation in the tongues of the average colonies, but I find there is considerable. When we find there are differences all the way from $\frac{13}{100}$ up to $\frac{21}{100}$, then it is evident that, by a little careful selection, we shall be able to secure a strain of exceptionally long-tongued bees. If our queen lives through the winter I shall be almost tempted to take her up to some island so that her daughters can be bred to drones from a queen or queens having equally long tongues. The Moore queen, already referred to, would be a good one to take. One colony should be devoted to the rearing of drones, and the other to the rearing of queens. By careful selection we might be able to find, probably, a daughter of these queens, whose bees would give the measurement of $\frac{25}{100}$. If we have already got $\frac{21}{100}$ as the length of the tongues of the bees of a *daughter** of our breeder, then why can we not reach the $\frac{25}{100}$ mark? I think we can. Then bee-keepers will be able to roll in *tons* of honey where *now* they get only hundreds of pounds.

Next summer I shall endeavor to make some sort of arrangement so that we can have the two queens put on an island. It will cost something to rear queens of this kind and in this way; but there is not a breeder in the land who would not be willing to pay $25.00 for a breeder whose bees could show up tongues $\frac{25}{100}$ long—a plump quarter-inch. Such length, I will venture to say, will reach into most of the clover-heads.

Later.—I have been measuring the corolla-tubes of some stray red-clover heads. The longest measure $\frac{3}{8}$ of an inch in depth, the shortest, $\frac{1}{8}$ inch, and the average somewhere about $\frac{1}{4}$ inch or $\frac{25}{100}$ inch deep. So then, if we can get bees with tongues of this length, we have come very near reaching our goal. At this rate we will get there next summer.

By the by, we shall not be able to fill any more orders for red-clover queens this season. We will try to take care of all orders thus far booked; but we can accept no more orders for this season's delivery, as we have been, to use a commercial phrase, "cleaned out."

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*We sold this queen as a tested clover. If we had known the length of her bees' tongues we would not have sold her. Now we want to get her back. But who has got her? Our books don't tell.

OUR HOMES,

BY A. I. ROOT.

And he said unto them, Follow me, and I will make you fishers of men.—MATT. 4:19.

There are a great many texts where Jesus called upon his friends to follow him. In several places he says in effect, "Leave all, and follow me." He told the young ruler (Mark 10:21) to sell all that he had, and give to the poor, and come and follow him. Now, the question comes up before us at the close of this century, "How shall we in this present age follow Jesus? If he were on the earth again to-day, where would he go? Would he keep away from the busy cities? Would he hold aloof from the rich, say from the millionaires?" I think not; for he took upon himself the responsibility of inviting himself to dine with Zaccheus; and he accepted invitations from the rich to attend their feasts. I do not remember that he ever neglected or refused any invitation. Sheldon has stirred the whole world by persistently asking the question, "What would Jesus do?" I wish to vary it a little by asking the question to-day, "Where would Jesus *go*, and how would he behave himself?"

When I first entered the Pere Marquette depot in Toledo, on my first trip to Northern Michigan, I made a good many inquiries of railroad men in regard to my trip. No one could answer me or take the time to answer me. My excursion ticket was to Traverse City. I wanted to visit Manistee first, and I knew I could save time and money by getting off at some station before I reached Traverse City. The conductor said I would have to wait till I had got up into Northern Michigan, and the conductor up there could tell me what I wanted to know. But I saw by the folder we should pass a station near Manistee in the night. There would not be any conductor to talk to, and, besides, I should not have my ticket. As I came into the large depot I noticed a lady presiding at the ticket-office. I overheard a conversation something as follows:

"Why, these folks have got a *woman* in the office there. How long have they had her?"

"She has been here only a short time. I think they got her in Ann Arbor. But she is a hustler, even if she *is* a woman. I have understood the company are exceedingly well pleased with her."

Now, I had an hour to wait, so I was not in any hurry. I thought I would wait till the crowd got away, and then I would see if she could (or would) tell me what I wanted to know. There was quite a crowd around the window. A gentleman asked her several questions. She answered them rapidly and pleasantly. When through he expressed his thanks, and she gave him a pleasant womanly smile—just such a one as a business woman ought to give customers, and nothing more. Then followed questions, tickets sold, and just such business as comes up at the window of a ticket-office when there is a crowd around. Every one who made a purchase or asked a question seemed pleasantly surprised to see her bright, ready, quick in making change, stamping, or writing. Each one expressed his thanks, and each one received more or less of that pleasant smile that I was beginning to understand and appreciate already. My good friend, there is a power in a woman's smile; nay, more—there is *money* in a woman's smile, and I am glad the great railroad companies are beginning to understand it. Well, I had not learned all about that smile, although dozens had been waited on. A poor woman with some crying children dragging at her skirts was in trouble. She asked different ones, but she did not seem to have the faculty of knowing who could or would answer her questions. Many laughed at her. Finally she got space at the window, and explained her difficulty. Then this bright, educated, and intelligent woman in the office made her sister on the other side feel that she was a sister in very truth. It made me think of my talk to you about the good Samaritan. It did my heart good to see the hard lines of trouble relax on the poor mother's face as this other woman told her patiently all she wanted to know, and set her mind at ease, at least for the present. I was already beginning to love the smile that I saw she gave to the multitude who came to her window; but it never came out in its full beauty and wondrous power until she saw a sister in trouble. Most of you have been at a ticket-office when a crowd was around, and have asked questions. Some of the agents are pleasant and courteous, especially if there are not many waiting behind them; but if there are, they are sometimes cross and surly, and snap you up as if you had not any sense at all to ask such ridiculous questions. My turn came pretty soon. I showed my ticket to the lady, and asked if she could tell me at what station I should get off to reach Manistee. Now, Traverse City is a long way from Toledo—several hundred miles; but this woman answered at once off hand, "You will have to get off at Baldwin, and you will lose your ticket from Baldwin to Traverse City. No stop-overs are allowed on this sort of ticket. You will reach there before morning, and if you will tell the porter where you want to get off he will ask the conductor to have your ticket ready for you." *

I told her I was greatly obliged, and that she was the first employee of the railroad I had met who could give me the information I desired. Had there not been other customers behind me about this time, I think I should have told her how it rejoiced my heart to see her help that poor woman. As I thanked her she gave me, too, a pleasant smile that I shall long remember, and then she took up the next difficult problem for somebody else. Later on, when I purchased my sleeper ticket at the same window, there were so many begging her to hurry (for it was train time) that she got the sleeper-berths a little mixed up; but she did not look cross, and did not answer anybody short. On the contrary, she looked up quite pleasantly to let us know she was master of the situation, and said something like this:

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* Not one of the men-folks, and I inquired of those wearing the railway uniform, seemed to know any thing about their line of road away across the northern side of the State. Did it just *happen* that this woman knew just the proper station to get off at, and the *time* to get off, without consulting a map or time-table? No, my friends, there was not any "happen" about it. She had simply gone to work and made herself familiar with the geography and the stations on their line—yes, with towns and cities twenty or thirty miles away from the Pere Marquette line of road, and that, too, at the extreme further end of the line.

"I have got things mixed up a little; but I can straighten it out all right if you will just give me a minute, and I will see that all have time to get on the train all right."

A month later I found this woman at the same window, and she was just exactly the same. I do not think anybody would call her a handsome woman, but yet her face and her *poise* were a wonderful study to me. I do not know whether she is a Christian or not; but she is certainly *Christlike* in her work. She is a *queen*, not only among women, but she is a model in business for our own sex. Some of you may say she is that way during *business* hours, because her bread and butter depends on it; but when she is off duty she may be like other folks. Well, even if this is true, she is head and shoulders above the rest of us, even if she does no more than to carry that gentle spirit with her during working hours.

Dear friends, I would much rather narrate scenes like the above than to complain of the way public officers treat traveling humanity; but I think I can show you better how much Christ's followers are needed in business by giving you one instance on the other side.

An old lady got on the train. I began studying her at once, and I thought she seemed perfectly capable of taking care of herself. I noticed in a little while she was asking the conductor a good many questions. The train stopped at Wayne, Mich., and a lot of the passengers got off, the conductor with them. While he was inside of the station the old lady asked a woman in the next seat if that place was Wayne. She nodded that it was, and pointed to the sign on the depot. At this the old lady gathered up her packages and slowly made her way out on the platform. I wondered why she was so late in getting off. Just as she reached the door of the waiting-room the conductor came out hurriedly. I could not hear what he said, but he took her by the arm, and marched her back into the car, put her down in a seat, and then said, so everybody could hear, "There! don't you get off that seat again until I tell you *where* to get off."

Now, I have made blunders enough in my life so I can realize just how this poor old soul felt. Everybody was looking at her, and most of them were snickering. If the conductor had not happened to come along just then, and had he not remembered her, she would have been a stranger in a strange land indeed. My heart ached for her. Had I not been afraid of meddling, and making matters worse, I would have gone and sat beside her and told her not to feel bad about it at all, for we all make mistakes sometimes. I rather expected some good woman in the car would go and talk with her; but she sat there all alone in her misery—yes, it *was* misery, for I have had my taste of it—until the conductor told her where to get off.

If Jesus were on earth I think we should find him on the busy railways, among crowds at stations, and possibly in little offices selling tickets. What a glad world it would be, dear friends! and, oh what a glorious thought, that it is the privilege of each and every one of *us* to put *his* yoke upon our shoulders, bear his burdens, and show the Christlike spirit behind the counter and everywhere else that humanity is found![*]

I have been telling you for some little time back how much I enjoyed my visit with Mr. Hilbert. To tell the truth, I have not a relative in the world whose mind and enthusiasm run in channels so nearly parallel with my own as does Mr. Hilbert's. He is never tired of learning something more about how things *grow*. He is an enthusiast on strawberries, potatoes, peaches, buckwheat, growing clover, bee-keeping, maple syrup, catching fish, and, in fact, he loves every thing I love, including good square *men* and *women*. We talked and talked, and the more we talked the more we found that was congenial.

Now, I hope my good friend Hilbert will not lose his friendship for me when I tell right out in print that he uses tobacco. That first morning when I called him through the telephone I began wondering if I could tell by the sound of his voice how old he was. I decided he must be somewhere between forty and fifty, and I got it pretty nearly right. While we were riding together in the buggy I conjectured by the smell of his breath that he used tobacco; but as days passed by, and I did not see him take a smoke, I began to feel troubled. This is what troubled me: Everybody who reads GLEANINGS knows how relentless and unsparing I have been in regard to the tobacco habit. He evidently had made up his mind that while I was his guest he would have to give it up. Of course, I am glad to have anybody give up tobacco; but I do not want anybody to break off the habit just on my account or because I am present.

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[*] Since the above was written it has occurred to me that we need followers of Jesus Christ at both ends of our telephone lines; and I think it is fortunate that women are filling so many of these places. Even in our own little town I often hear the remark that when a man presides at the central we can not get any accommodations at all; but when the girl gets around in the morning she is always pleasant and cheerful and accommodating. Mrs. Root says she can tell toward night by the tone of the girl's voice that she is tired, but that she is always patient. I have told you how friend Hilbert gets the good will of his postmaster so he will even open and read letters for him through the telephone. Well, friend H. has a remarkable faculty or gift for keeping the telephone people good-natured. He has a sort of comical pleasantry about him, when he wants a favor, that is contagious; and it gets hold of a body, even through the telephone. Now, he is not a church-member; and I am afraid he knows very little by practical experience of the things we talk about in our prayer-meeting; but yet he has a winning way and a winning *voice* that will make him a power for righteousness when he is once enlisted, and marching under the banner of Him who "pleased not himself."

No good can come — at least no very *great* good—from any change or any reform without a better or a deeper foundation. When we became pretty well acquainted I told him to please use his pipe or cigar, whichever it was, just the same during my presence as he would in my absence. At first he declared he was not going to do it, and I told him I could not consent to stay and make myself so perfectly at home unless he would also make himself perfectly at home in his own *house;* and I felt glad to see him get his pipe and take a smoke.

Now, some of you may criticise me right here. You may think I am backsliding, or that I am compromising with evil; but I think you are wrong. I believe I was doing as Jesus would have done. If you will follow his life and read his sayings you will notice he very seldom criticised. He taught great fundamental truths, and let the person make the application. When he provided wine for that wedding, I think it was along in that same line. He for the time being conformed to the customs of the people he was with. When he dined with Zaccheus I do not believe he found fault with the ways of the household, even though many of them might have been bad. He first wanted to gain the hearts of the people in that home, and leave the result to be accomplished with the Christ spirit in the hearts of the people. Mr. Hilbert does not use the foul-smelling tobacco that is to me so exceedingly offensive. He said he could not put up with it any more than I could. He uses only pure home-grown tobacco-leaves. When I first began to smell it in his breath I was wondering what made it remind me of something away back in years gone by. In a little time I guessed what it was. When my father used to take me on his lap, away back in my childhood, and gave me a kiss, and perhaps sing me to sleep, I always smelled the tobacco in his breath; but it was not like the tobacco of modern times. It was exactly the same that I noticed when riding side by side with my good friend Hilbert. Now, mind you, dear friends, I do not love tobacco one bit better than I did a few weeks ago, but I hope I am telling the truth when I say that I have learned to love humanity *more.* My good old mother used to say that we should love the sinner while we hate the sins that make him a sinner; and this is what Jesus taught. In our hungering and thirsting for temperance reforms I am afraid we are sometimes forgetting ourselves, and hating the *sinner* as well as hating his sins. I believe Dr. Dowie, with his *Leaves of Healing*, made his greatest mistake when he began to call people devils because they did not accept the teachings of the Bible just as he does. I am afraid some of our temperance periodicals, especially those that go into temperance politics, defeat themselves in the good they honestly want to do by being too bitter toward the sinner. Christian ministers realize everywhere that almost their only hope of doing good is to gain a hold upon those who are leading sinful lives. Of course, we may carry this thing too far. I once heard of a minister who learned to smoke cigars, thinking by so doing he could better win the esteem and respect of some of his young men. Of course, he carried the thing too far, and I believe he afterward admitted it.

One evening friend Hilbert and I sat by the fire. I was reading the *Rural New-Yorker*, and he was reading GLEANINGS. I do not know what put it in my mind, but it occurred to me that probably he was in the habit of smoking his pipe while he read the papers; and I told him if that was his custom I wished he would light his pipe as usual.

"Why, Mr. Root, if I have understood you in times past you could not stay in the room where anybody was smoking a pipe."

"Friend H., I want to assure you I *can* stay in the room, and I shall feel more comfortable to have you do in your own home as you do when I am not here than to have you change your habits or put you out because of my presence. Please smoke your pipe exactly as you do at other times," and he did; and I fell to wondering what the readers of GLEANINGS would say could they have a picture of us two sitting chatting as merrily as could be; and, to tell the truth, I did not feel any inconvenience. It made me think of my dear old father, and it seemed specially homelike.

Now, dear friends, do not any of you rush to the conclusion that I have changed my mind in regard to tobacco. If I am correct, Mr. Hilbert's boys do not use it at all. He is exceedingly anxious that they shall not use it; but in regard to setting them an example, that is his affair and not mine. I told him, before coming away, that I feared the habit might grow on him. He uses only a small amount of tobacco now, and that of a very mild kind. If he chooses to give it up of his own accord I shall be exceedingly glad; but I do not mean that tobacco shall break one of the pleasantest friendships I have ever formed. In our zeal to have the world conform to *our* standard or notions of things we should remember there are worse things that afflict humanity than the use of tobacco. The man who makes a profession of religion, and never pays his debts, and keeps contracting new ones whenever he finds a chance, and with no expectation of being able to pay them, is doing far more harm in the world than the man who uses tobacco. Jesus taught us to be consistent; and if we are going to be known of all men as his followers, we *must* be consistent; we must love humanity more than we love to see people accept our notions in regard to things that are sinful. In this way we shall become skillful and successful "*fishers of men.*"

EVEN MILLIONAIRES MUST STOP SMOKING CIGARETTES.

We clip the following from a recent number of the *Rural New-Yorker:*

> The chairman of the directors of the Union Pacific Railroad has issued an order forbidding the smoking of cigarettes by employees. George Gould is a director, and he recently came to a meeting smoking a cigarette. This is the way the chairman talked to him:

"My orders just issued to all employees of this company forbid cigarette-smoking You, George Jay Gould, are a director, and therefore an employee, for you get $10 for every directors' meeting that you attend. Now, don't you ever come around this office smoking again!"

That's business from all points of view.

NOTES OF TRAVEL

BY A.I.ROOT.

Friend Hilbert has just purchased a Robbins potato-planter—that is, his potatoes were planted with it this season. I expressed some surprise to know that it was the only potato-planter anywhere in that region; but the answer given me was a still greater surprise.

THE WAY THEY MARK OUT AND PLANT POTATOES IN THE GRAND TRAVERSE REGION.

I supposed the marking was, of course, done with a horse. Not so. In this great potato-growing country the marking is done as it has been done for years, by dragging a piece of log-chain where the mark is wanted—not one piece at a time, mind you, but three, five, or seven pieces. Take a piece of heavy log-chain with about a dozen links. Tie this with a light rope or strong cord to a pole. The cord should be four or five feet long. Now have as many of these cords and chains attached to the pole at the right distance as you can handle. One man alone could make two marks, and perhaps three. Two men will make five or six, or even seven. When you commence, one of the men takes one end of the pole and goes straight toward a stake at the opposite side of the field. After this, one man walks in the mark made by the outer chain. Of course, it might depend somewhat on how many horses you had and how many men or boys there were on the farm. One thing I like about it is that, when your ground is worked up nice and mellow for potatoes, you do not tramp it up with a team of big heavy horses, or, rather, trampitdown solid.* On the island of Bermuda they wanted their potato ground so that a man could thrust his arm in it up to his elbow. Well, with hand-marking you can *keep* it light and soft. I believe they usually mark their ground both ways 2½ to 3 feet apart. By shoving the strings along the pole that holds the chains you can mark it both ways, and have them 3 feet by 18 inches or 3 feet by 15 inches. Potatoes that are liable to grow *too* large we prefer to have not more than 15 inches apart. Now for the planting.

At Traverse City there is a place where they manufacture a little hand potato-planter. I am going to give you a cut of it later on. This potato-planter is made of metal, and does not weigh more than a pound or two. It has a wooden handle. The operator has a bag of potatoes swung around his shoulders. He picks the pieces of potato from the bag with his left hand, brings the planter up with his right hand until his left hand can drop the piece in the cavity. Then as he puts it down where the marks cross each other, he sets his foot on it, to get it down to the required depth. In this way one man will plant an acre easily, and some men — yes, and some *boys* — have planted two acres in a day. It is hard work, though. To save lugging a good many pounds of potatoes they are cut and located at each end of the field; but if it is a long one, in the middle also, or oftener still. This way of planting and this way of marking, I can imagine, is specially adapted to fields where the stumps are not all out of the way. A man can get over a stump, or get around it, and still keep his marker going in a straight line in a way that a horse could not or would not; and it just now strikes me this will be a grand invention (for I call it an invention) for those who have small pieces of land and use hand cultivators. By the way, hand cultivators and all hand tools will work just beautifully in that soft, pliable, rich sandy Michigan loam. The operator can very quickly fix a pole with some light chains to mark out an acre, half an acre, or even a village lot, and do it handsomely and accurately. Then with this little planter he can plant it and cultivate it with the little garden plow or weeder. Friend Hilbert has a weeder, but somehow or other he does not take kindly to it. He prefers his drags and smoothing-harrows that he uses after the same fashion he did before weeders came out.

Now, may be some one of our various agricultural papers has published accounts of marking land by dragging a piece of chain, but I have never seen it or heard of it, and yet I have been reading pretty much all the agricultural papers published in the United States, more or less, for years past. If I am making a mistake, will somebody tell me where such an arrangement has been described in print? I know there has been a hand potato-planter carried around, and I have heard the statement that it would enable a man to plant an acre a day or more; but the planter carried around by agents was a heavy and clumsy affair, and no good either. Mr. Hilbert, as well as myself, was swindled into buying one; and neither he nor his boys could use it after they got it. It was a tin-tube arrangement. You do not want any tube at all. This method of marking has been in use ever since the people up there can remember, yet nothing is said about it in our books and papers. I do not know that I can blame some of the old veteran potato growers of the Traverse region for being skeptical in regard to "book farming." Friend Hilbert said he had noticed year after year the arrangements with pins or runners on them, to be drawn by a horse, pictured every spring in our farm papers; but he could not for the life of him see what anybody wanted of such a rigging. I do not see why the above will not answer for planting corn and other seeds as well. Of course, the horse planters are the thing for large areas. Friend Hilbert says the Robbins planter is not so much quicker, but it is a good deal easier for the tired farmer, or somebody who is not very strong, to sit on the seat and drive a team than to carry a load of potatoes and carry a planter. Now, I expect to plant at least a part of that 40 acres (it may be a very *small* part) with a chain marker and a hand planter.

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* You may remember T. B. Terry says in his potato-book that when he has got his ground up nice and mellow he would like a balloon or some similar arrangement to pull his tools over the ground in order that he might avoid tramping it down solid again with the horses' feet. Potatoes, to be handsome, must have a soil above (and below) them so loose and yielding that they can swell out in all directions without being cramped into ungainly shapes.

HIGH PRESSURE GARDENING

BY A. I. ROOT.

Perhaps I had better head it "High-pressure Fruit-growing." Ever since my directions in the tomato-book have gone out about "How to Support a Family on One-fourth of an Acre," there have been calls for facts to support my claim. A few days ago Mrs. Root showed me a peck of beautiful prunes, as handsome as those that come from Oregon and California. When she said they grew in Medina I said she must be mistaken, and I was afraid the man who sold them did not tell the truth. As he happens to be our iceman she told him about it, and he invited me to go down and see his fruit-garden. It belongs to Mr. J. A Fretter, who lives in the outskirts of the town. On a piece of ground just 40 by 100 feet, or nearly a tenth of an acre, he planted, eleven years ago, 24 plum-trees. They were purchased from J. Austin Shaw, Rochester, N. Y. The trees were planted 12 by 14 feet. The varieties are as follows: Two Moore's Arctic; two Guii; one each of Beauty of Naples and Prunus Simoni; two each of Imperial gage and Lombard; six Bunker Hill; four German prunes; one Hungarian prune. The Hungarian prune is perhaps the finest and largest of all. They are so sweet that no sugar is needed, and they are certainly as luscious as any peach. Two years from the time of setting the trees he began to have plums and prunes; and he has had more or less of a crop every year for nine years. He sprays three times every season with Bordeaux mixture and Paris green. He does no bumping. The plum-orchard is surrounded by poultry netting, and he winters about 24 laying hens in this inclosure, and every season he raises from 100 to 150 chickens. These chickens are confined under the plum-trees. The ground is kept worked over soft and mellow from early in the spring until near fruiting-time. Now for the result:

He has, during the past season, sold about 50 bushels, or an average of about two bushels to the tree, as you will notice—some more and some less. Well, some of the finest brought $2.00 a bushel, the average price being $1.75, making $87.50 from the tenth of an acre, or at the rate of $875.00 from a whole acre. I do not know what he received for the eggs and chickens, but certainly enough to pay for the care of the plum-trees. I asked him if there was any reason why he could not manage a whole acre so as to get as good results as he did from the tenth of an acre, and he said he thought there was no reason in the world.

Now, friends, what is there to hinder every one of you from doing likewise with any little spot of ground in your dooryard? In connection with this you want to read Terry's remarks in regard to owning some ground, see p. 819. While I am about it, let me mention a plum-orchard I saw in the Traverse region. It belongs to A. S. Dobson, of Traverse City, Mich. Mr. D. lives about 4½ miles from the city; but after going over the hills to his place on a hot day I should call it a good ten miles. Some of the hills, he tells me, are 700 feet high. Well, right on these hills he has a pretty little home. I think he has only ten acres of land, or a little more. The greater part of it is put out to plum-trees; and there are certainly no handsomer trees in California, Oregon, or anywhere else. From the ten acres, if I remember correctly, he has sold something like $1000 worth of plums. One block of trees, occupying only a small part of an acre, gave a crop that sold at the rate of $160 per acre.

One fact that comes out strongly with all these successful stories of fruit-growing is that clean cultivation between the trees until the fruit is nearly mature is the principal point in success. Where stable manure was applied, at least in large quantities, it had the effect of making the trees make too strong a growth late in the season, and rendered them more liable to winter-kill. I believe all agree that spraying is important, and I had supposed there was no success without bumping to get rid of the curculio; but Mr. Fretter has done no bumping at all. The hundred or more young chickens kept among the trees all the time seem to have had the effect of keeping off the curculio. I am greatly pleased to know that the German and Hungarian prunes can be grown both in Michigan and Ohio, and probably almost everywhere. Mrs. Root prefers them to the finest peaches; and they will keep longer, so far as I know, than any other fruit known. We have had them shipped in from Oregon, and have kept them two weeks after that, without spoiling. They seem to have a tendency to dry and shrivel up before they show any symptoms of rot. The Hungarian prune especially is a most beautiful and luscious fruit.

LIKE PRODUCES LIKE.

When the greater part of our Carman No. 3 potatoes had the vines all dead and dried down I noticed two rows at the side of the patch, green, rank, and luxuriant. These two rows stood out sharp, distinct, and clear from the rest of the patch, and I thought they must be a different variety; but when Frank said they were Carman No. 3, like the rest, I replied:

"Why, what in the world should make just two rows so green and thrifty, while all the rest, with only a hill here and there, are all dead and dried up?"

"Why, don't you remember, Mr. Root, you told us last year to pick out all the hills that were green when we got ready to dig, and save the seed, and plant it by itself? and we saved out enough of the 'green tops' to make these two rows."

There it was, a wonderful object-lesson. The vines of these two rows were very much larger; and the way the ground is heaving up with big potatoes underneath it, looks as if there might be almost double the crop. Here is an illustration that like produces like, "with a vengeance." It is all the result of careful selection for just one single season. You may remember I spoke of a similar experiment made by Wilbur Fenn a year or two ago. The extremely hot weather of the past season caused blight, or it may be a sort of hot-weather blight, to an unusual degree; and I am satisfied many vines have died down when they were not much more than half grown. On the other side of the patch from these two rows I have mentioned, there are three rows equally rank and green; but these are the Craigs, and the Craig has always shown on our grounds this same immunity from blight ever since we have had it. As we were ready to put in wheat, and these two strips I spoke of being so rank and green, we have left them to be dug later, for no frost has yet reached us in this locality up to to-day, Oct. 5.

In connection with this incident, permit me to mention that Ernest says we have worker-bees from a *daughter* of that honey queen, whose tongues are as long as those of the bees of the mother colony. Unfortunately (or perhaps fortunately for somebody else), this queen was sold before her bees had hatched. Ernest says he would give $25 for her in a minute if he could be sure he had the mother of these bees with long tongues. Do you not see, friends, there is a wonderful field opening out before us, not only in improving our potatoes and honey-bees, but in almost every department of animated nature? With bees and potatoes it does not take so many years as it does with cattle and horses and some other things; but there is an outlook for big pay to any patient, faithful, and honest worker along the lines I have pointed out.

HAVING SOME LAND OF YOUR OWN.

In a recent number of the *Practical Farmer* friend T. B. Terry has something so good on this matter that I copy it below:

> Hold on to your land, friends, if you have some. If you haven't any, it will be a good thing to work for. It is inspiring to actually own even a small piece of land. Mr. G. tells us how he traded an old watch, not worth a dollar really, for a little piece of poor land when he was a boy. And then his father said he paid too much for it. But he said he went out on that land, poor as it was, after it was deeded to him, and it thrilled him through and through to think he owned the ground he stood on, away down to the center of the earth, away up to the stars. Birds were sitting on the branches of the trees, and singing—*his* trees and *his* branches, and their songs never sounded so sweetly to him before. It is a valuable ambition for every young man, every boy, to own a piece of land, if no more than an acre. Save your money, boys, toward buying some land where you can make a little garden of Eden your home when you get older. Perhaps it would be well to put your money in a good savings bank, and let it accumulate until the right time comes for investing it. If you loved the country, with its pure air and sunshine, and quiet and independence, as much as the writer does, you would never pay one cent for tobacco or liquor, but would save every thing possible to be used in getting a country home for your best girl and yourself. I hardly ever talk with a business man in town without finding out that he means to get a farm to live on in his old age. Many men working on a salary have said that, as soon as they could pay for a good farm, they intended to change their business. Most men love the country, in summer at least; and in many sections now it is easy to live on the farm and get into a large place by electric car readily. Thus one can live in the best place and have many of the advantages of town within his reach.

I have felt exactly what friend Terry expresses so well a great many times in my life. The first piece of land I ever owned was traded to me for an old pistol. The land was a deserted stone-quarry. Then I went out and looked it over with just the feelings Mr. Terry describes. I hunted up the few trees that were on it, and made plans for improving the little piece of soil. But a neighbor wanted to get stone out of it, and when he offered me $50 for my little piece of real estate I reluctlantly let it go. I have never bought a piece of ground since, or had a piece come into my possession, without something of the same feeling. Nearly ten years ago I looked over the forty acres I have been telling you about in the Traverse region. There was not much improvement going on in that locality at that time; but when I saw the potato-fields all around it a few weeks ago it gave me a thrill of delight; and when I found a soft-water spring at the back side of it in the dense woods, it gave me another thrill. It is true, the water disappeared again after running a few rods in the loamy sandy soil. The elevation is sufficient, however, I think, to enable me to carry it up to a point near the bay where we are going to locate a summer cottage. Down near one corner of the forty acres is a patch that was cleared off some years ago. This little portion is covered now with a dense heavy mat of natural grasses. Of course, I can not be sure my land is as good as friend Hilbert's, a mile and a half away; but there was one object-lesson right there that almost made me shout for joy. Somebody had begun improvements on the land adjoining mine. There are no fences in that locality, for they do not need any; but on this piece adjoining my own, right up to the line, were some of the finest-looking potatoes I ever saw anywhere. I pushed my hand down into the loamy soil, where the ground was already bursting open, and found great beautiful tubers, smooth, and free from scab, and the tops were not at all touched by blight. This is on new land that has never had stable manure or fertilizer of any sort; and I am planning to grow some nicer seed potatoes here another season than I have ever grown in Ohio. The greater part of the piece is covered by a dense undergrowth that has sprung up since the native timber was cut off—indicating to me, at least, there is a wonderful fertility there. While opening up the spring, and hearing the birds sing around me, I was obliged to think of friend Terry's remarks, for I do not think I ever enjoyed any work in my life more than during the few days I spent there on "my farm in the woods."

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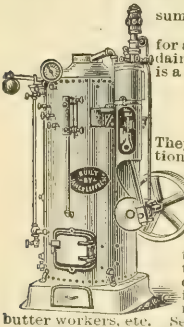

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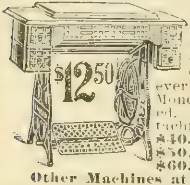

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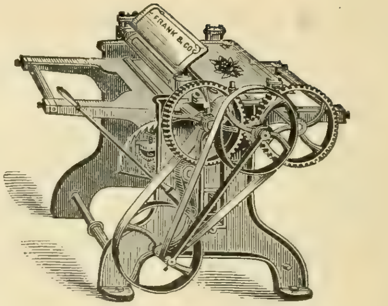

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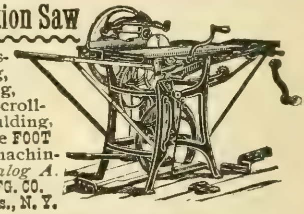

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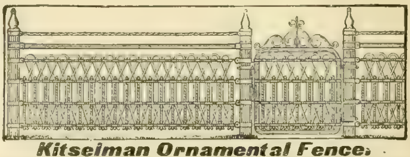

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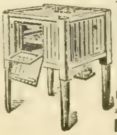

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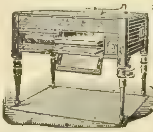

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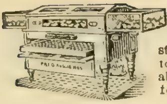

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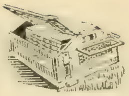

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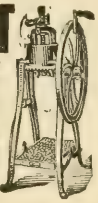


—in fact they lay double the eggs winter and summer **when fed Green Cut Bone.**

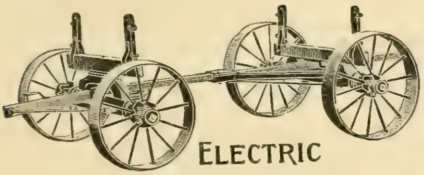
Mann's New Bone Cutters

cut all hard and soft bones, meat, gristle, &c., fine, fast and without choking and run easy. Clover cut with our **Clover Cutters** helps wonderfully. Mann's Granite Crystal Grit and Feed Trays too. Catalogue FREE.

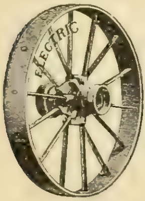
F. W. MANN CO., Box 37 Milford, Mass.

Farm Wagon Economy.

The economy of this proposition is not all all found in the very reasonable price of the wagon itself, but in the great amount of labor it will save, and its great durability. The Electric Wheel Co., who make this Electric Handy Wagon and the now famous Electric Wheels, have solved the problem of a successful and durable low down wagon at a reasonable price.



This wagon is composed of the best material throughout—white hickory axles, steel wheels, steel hounds, etc. Guaranteed to carry 4000 lbs. These Electric Steel Wheels are made to fit any wagon, and make practically a new wagon out of the old one. They can be had in any height desired, and any width of tire up to 8 inches. With an extra set of these wheels a farmer can interchange them with his regular wheels and have a high or low down wagon at will. Write for catalog of the full "Electric Line" to Electric Wheel Co., Box 95, Quincy, Ill.



Best on Earth! A queen I had from you lived 3 yrs., and was the best queen I ever had, and did not swarm.—E. W. Brown, Morton Park, Ill., July 30, 1900.

Three select breeding queens, $2.75.

Henry Alley, Wenham, Mass.

Sharples Cream Separators—Profitable Dairying.

The Modern Farmer and Busy Bee.

Emerson Taylor Abbott, Editor.

A live, up-to-date Farm Journal with a General Farm Department, Dairy, Horticulture, Live-stock, Poultry, Bees, Home and General News. The Editor has had practical experience in every department of farm work. To introduce the paper, it will be sent to New subscribers one year for 25c. Sample copies free. Best Advertising Medium in the Central West. Clubbed with *Gleanings* for $1.00.

ADDRESS

Modern Farmer, St. Joseph, Mo.

A BASKET FULL OF EGGS

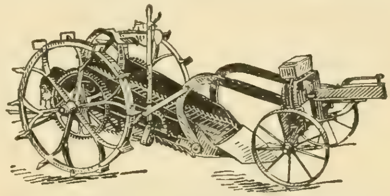
by using Ley's Poultry Condition Powders. Puts all fowls in a normal condition; destroys all disease germs; purifies the blood; is a tonic and nutriment. Price 25 cts. a pk.; 5 for $1 00. Ley's Thoroughbred Minorca's Eggs, $1 00 for 13. Also Thoroughbred Belgian Hares. **Geo. J. Ley, Florence, Cal.**

HEN'S EGGS are worth more than twice as much in winter as in summer. You can have plenty of eggs all winter if you feed **Green Cut Bone.** To prepare it nothing equals the **ADAM GREEN BONE CUTTER.** It's the only bone cutter made with **ball bearings.** This makes it run easier than any other. Cuts hard and soft bone without choking. Easy to keep clean for it cleans itself. Made for hand and power. Send for free catalogue No. 39 **W. J. ADAM, Joliet, Ill.**

In writing, mention Gleanings.

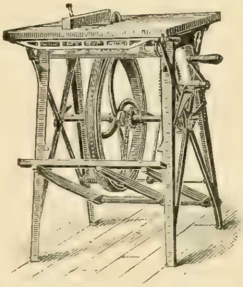
DON'T DIG Potatoes by Hand.

It is a slow and expensive way. The cheapest, quickest, and easiest way is to **USE THE IMPROVED**



Dowden Potato-digger.

It gets them all, no matter how deep or shallow. Our book explains how. The book is free. Write for it now. **DOWDEN MFG. CO., Box 23, Prairie City, Iowa.**



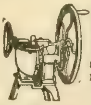
Barnes'

Hand and Foot Power

Machinery.

This cut represents our combined circular saw, which is made for beekeepers' use in the construction of their hives, sections, boxes, etc. *Machines on trial.* Send for illustrated catalogue and prices.

W.F.& John Barnes Co.,
545 Ruby St.,
Rockford, - - Ill.



HOW MANY EGGS DOES A.... HEN LAY ?

Keep a record and know. Our new catalogue in addition to telling about the **Humphrey Green Bone and Vegetable Cutter** (the easiest running and most rapid cutter) contains blanks for a year's record. It's free. **Humphrey & Sons, Box 51 Joliet, Ills.**

HONEY QUEENS.

I have them, as daily letters testify. Recent conclusions force the belief that the leather-colored strain of three-banders excel in honey-gathering. If you want Goldens my strain takes the lead of all others, and I have tried them all; 250 colonies for honey, and 200 strong nuclei that will winter over. I am prepared to send you a queen any day you may order. Tested or untested queens, $1.00. Leather breeders, $2.50. Owing to increased demand straight 5-band breeders are $5.00 each.

W. H. LAWS, Round Rock, Texas.

Fine young mismated Italian queens, 25 cts. each.
C. G. FENN, Washington, Conn.

At the Paris World's Fair

We received THE SILVER MEDAL

for the EXCELLENCE of our Goods.

The supplies we sent there were no better than we are sending every day to our customers all over the world. Our prices are as low as any—sometimes lower.

We make almost every thing used by bee-keepers. Our **Falcon Sections** and new-process foundation are ahead of any. If you will want any supplies for next season get them **now**. Prices will be higher soon. If you haven't our catalog, send for it. A copy free. Also sample copy of the **American Bee-keeper** (now in its 11th yr.). Address

THE W. T. FALCONER MFG. CO.,
JAMESTOWN, N. Y.

(**W. M. Gerrish, East Nottingham, N. H.,** carries a complete line of our goods at catalog prices. New England customers save freight by ordering of him.)

Kind Words from our Customers.

I think GLEANINGS is a cheap paper at the price. The more I read it the better I like it.
Morganton, N. C., July 3. J. S. PARSONS.

I have taken GLEANINGS longer than I ever took any one paper before, and I expect to take it as long as I can find a dollar to pay for it.
Abingdon, Va., June 13. W. MILTON MOORE.

The two Italian queens which I bought of you about two years ago at $2.25 each, are ahead of every thing I have ever tried. They are the best workers and finest bees of my 60 colonies. TOFIELD LEHMAN.
Elgin, Iowa, July 4.

I had planned to go on an excursion to Chautauqua to-day; but after reading the letter from Mr. King in last GLEANINGS I concluded to stay at home and send to you the money my ticket would cost, as a contribution to the India relief fund. Inclosed find money order for $2.00. J. MATTOON.
Atwater, O., July 22.

A KIND WORD, AND SOMETHING ELSE, FOR STARVING INDIA.

Bro. Root:—Inclosed please find $50.00 for India relief fund.

I should have been better pleased if Bro. King had told of some spiritual effect his ministration had made on those people. If missionaries busy themselves simply or mostly in feeding those poor souls, what more than nature (human nature) will be manifested? We need to partake of his *divine nature*, and administer it to effect much good. The principal effort of the missionary should be to lead those wayward heathen to repentance. God now has a speedier, cheaper, and better way of saving men than he had in ancient times, through his Son, through manifestation of his Spirit. The government might save 5,000,000 naturally, and not save 50 spiritually; and a missionary with a heart burdened for souls might save 500 with from $1000 to $5000. I would rather save one soul than 10,000 bodies.
R. F. WHITESIDE.
Little Brittain, Ont., Sept. 26.

Permit me to explain to our readers that the above comes from one of the old veterans; in fact, I rather think friend Whiteside was among the very first who subscribed for GLEANINGS when it was only a quarterly, 27 years ago. Perhaps many of us have felt just as he does, that this grand opportunity of leading souls to Christ Jesus should not be lost. Of course, he believes in saving the bodies or he would not have made this generous contribution. Very likely, while so many are starving just because the missionaries can not get around to them fast enough, the work is mostly concentrated in the work of saving the bodies; but when physical relief has been given, I am sure every missionary will enter into the work, heart and soul, of bringing souls into the kingdom.

INDIA RELIEF FUND.

G. W. Corbet, Hancock, Md	$1 00
Walter & Feltner, Webster, W. Va	1 00
Friend, Glenwood Spr., Col	2 00
M. E. Spence, Lake Worth, Fla	2 00
H. F. Hagen, Rocky Ford, Col	7 50
W. H. Hagans, Matlock, Ky	2 00
R. F. Whiteside, Little Brittain, Can	50 00

Two Years for $1.00.

To raise a good crop of honey is one thing—to sell it is another.

To publish a good bee-journal is one thing—to secure a big subscription list is another.

Many bee-keepers pay a great deal of attention to the production of a good crop—and let it sell itself.

In years past I have worked a great deal harder in trying to make a good bee-journal than I have in trying to sell it.

I thought: "If I make a good journal, people will find it out."

They won't. They have to be told of it many times over — seeing several copies is more convincing.

Let me go back a little. I once thought that no inducement should be offered a man to subscribe—he should buy a journal simply and solely for itself.

This plan is dignified; but, as a getter of new subscribers it has no standing with "inducements."

To succeed, a journal must have subscribers. The more subscribers, the better the journal—the better the journal, the more subscribers.

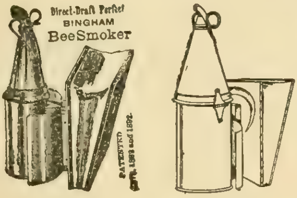
To cut it short, the publisher of a good journal better offer such inducements that a large number of people will subscribe, and thus become acquainted with his journal.

Here is my "inducement:" For $1.00 I will send the Review for all of this year and next. Two years for the price of one.

I have been offering 12 back numbers free, odd numbers, picked up here and there, such as I could spare, but this stock is exhausted. The ones sent out now will be consecutive issues, for two years, beginning with last January.

Send on your dollar, and, as soon as it is received, I will send the back numbers for this year, and then keep on sending the Review from now to the end of next year.

W. Z. Hutchinson, Flint, Mich.



BINGHAM SMOKER.

DEAR SIR:—Inclosed find $1.75. Please send one brass Smoke-engine. I have one already. It is the best smoker I ever used.
Truly yours,
HENRY SCHMIDT, Hutto, Tex.

MADE TO ORDER.

Bingham Brass Smokers

Made of sheet brass, which does not rust or burn out; should last a lifetime. You need one, but they cost 25 cts. more than tin of the same size. The little open cut shows our brass hinge put on the three larger sizes. No wonder Bingham's 4-inch smoke-engine goes without puffing, and does not drop inky drops. The perforated steel fire-grate has 381 holes to air the fuel and support the fire.

Heavy tin smoke-engine, 4-inch stove, per mail, $1.50; 3½-inch, $1.10; 3-inch, $1.00; 2½-inch, 90c; 2-inch, 65c. Bingham smokers are the originals, and have all the improvements, and have been the standard of excellence for 22 years. Only three larger ones brass.

T. F. Bingham, : : Farwell, Mich.

Marshfield Manufacturing Company.

Our specialty is making SECTIONS, and they are the best in the market. Wisconsin basswood is the right kind for them. We have a full line of **BEE-SUPPLIES.** Write for free illustrated catalog and price list.

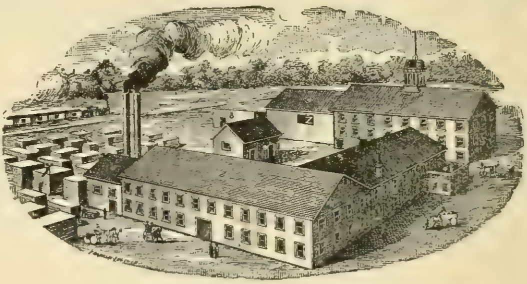
Marshfield Mfg. Co., Marshfield, Wis.

NOW READY!

64-page Catalog of Every Thing Bee-keepers Need.

Illustrated and fully described. Especially valuable to beginners for the information it contains Send your address on a postal and get it NOW. Established 1884.

J. M. Jenkins, Wetumpka, Alabama.



BEE-SUPPLIES!

We have the best-equipped factory in the West. Capacity, one carload a day; and carry the largest stock and greatest variety of every thing needed in the apiary, assuring BEST goods at the LOWEST prices, and prompt shipment. We want every bee-keeper to have our FREE ILLUSTRATED CATALOG, and read description of Alternating Hives, Ferguson Supers, etc. *Write at once for a catalog.*

We also manufacture TANKS of either wood or galvanized steel, all sizes, any form, and for all purposes. Price list free.

KRETCHMER MFG CO. Red Oak, Iowa.

Don't Buy Supplies

Until you see my 40th annual catalog. A full line of hives and fixtures best adapted to our New England climate. Also best brands of **Comb Foundation and Section-boxes.** I have also made arrangements to keep quite a general stock of

A. I. Root Co.'s Goods at Their Prices.

Parties desiring these goods can get them of me, and **Save Freight Charges.** Bees, Queens, and Nucleus Colonies from the **very best strains** in America. A 40-page illustrated catalog free. Address

W. W. Cary,
Lyonsville, Mass.

Black and Hybrid Queens!
— IN FACT —
ALL INFERIOR QUEENS!

should be replaced with good young ones. With such queens you will have better success in wintering, and a strong colony for the earliest honey-flow. I am a honey-producer as well as a queen-breeder, and know the value of a good queen in a honey-hive. I have selected for my mothers, queens that I consider perfect in every respect. Their bees are large, gentle, and wonderful honey-gatherers. My drone-mothers are also carefully selected.

Queens Go by Return Mail.

One untested queen, 50c; 12 for $5.50. One tested queen, $1.00; 6 for $5.50; 12 for $8.50. Write for prices on larger numbers.

$10 Reward to the person who sends me the most money for queens between April 1 and November 1, 1900.

W. O. Victor, Wharton, Texas.

HONEY-JARS.

One-pound square, $5.00 a gross; with labels, $5.60 a gross.

Cartons & Shipping-cases

for all sizes of sections. Our cartons are of a superior quality of cardboard, but cost no more than others. Sample free.

Untested Italian queens, 60c. Tested, $1.00. Catalog free.

I. J. Stringham, 105 Park Place, N. Y. Apiaries at Glen Cove, L. I.

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Honey Column

GRADING RULES.

Fancy.—All sections to be well filled, combs straight, firmly attached to all four sides, the combs unsoiled by travel stain, or otherwise; all the cells sealed except an occasional cell; the outside surface of the wood well scraped of propolis.

A No. 1.—All sections well filled except the row of cells next to the wood; combs straight; one-eighth part of comb surface soiled, or the entire surface slightly soiled; the outside surface of the wood well scraped of propolis.

No. 1.—All sections well filled except the row of cells next to the wood; combs comparatively even; one-eighth part of comb surface soiled; or the entire surface slightly soiled

No. 2.—Three-fourths of the total surface must be filled and sealed.

No. 3.—Must weigh at least half as much as a full weight section.

In addition to this the honey is to be classified according to color, using the terms white amber and dark; that is, there will be "fancy white," "No. 1 dark," etc.

CITY MARKETS.

New York.—During the past two weeks, receipts of comb honey have been quite extensive, several carloads of California and Nevada honey having arrived, and some large shipments of buckwheat; and for the present, there is plenty to meet the demand. We quote: Fancy white, 15@16; No. 1 white, 14@14½; fancy amber, 12½@13; amber, 11@12; buckwheat, 10@11. Extracted white, 7½@8; light amber, 7; amber, 6. Beeswax dull at 27.

Hildreth & Segelken,
Oct. 19. 120, 122 West Broadway, New York.

Chicago.—The receipts of all kinds of honey are lighter than usual at this season of the year. The market is steady with no advance probable, as prices are now at a point that is curtailing consumption. Fancy white brings 16; No. 1, 15; and good white, but travel stained or irregular in shape, 13@14; amber, 10@12; dark, 8@10 Extracted white clover and basswood, 7½@8; amber, 7@7¼; buckwheat and other dark grades, 6½@6¾. Beeswax, 28.

R. A. Burnett & Co.,
Oct. 18. 163 South Water St., Chicago, Ill.

Columbus.—Nothing is offered for sale outside of Colorado white comb, which is selling at 17 for fancy and 15 for second grade. We are wanting white clover, basswood, and amber, and should like to hear from parties having any. Evans & Turner,
Oct. 16. Columbus, Ohio.

Milwaukee.—The market here for honey is very quiet; receipts and sales keep fair pace with each other. There is only a moderate supply, and might be increased without causing an overstock; and any shippers can be assured of good results for fancy comb or extracted. We quote: Fancy 1-lb. sections, 16½@17; A No. 1, 15@16½; fancy amber, 14@15. Extracted in barrels, kegs, and pails, 9@9½; dark, 7@8. Beeswax, 25@27. A. V. Bishop & Co.,
Oct. 20. Milwaukee, Wis.

Philadelphia.—Honey in comb is in good demand, and the fancy-grade arrivals are not equal to the demand. Buckwheat comb is slow sale at the advanced prices, with big supply on hand. We quote fancy white, 16@17; No. 1, 13@14; buckwheat, 10@11. Extracted white, 8; amber, 6@7; dark, 5½@6. Beeswax 26. We are producers of honey—do not handle on commission. Wm. A. Selser,
Oct. 20. 10 Vine St., Philadelphia, Pa.

Boston.—Our honey market is very strong at the following prices, with supplies very light: Fancy, 1-lb. cartons, 17; A No. 1, 15@16; No. 1, 15; No. 2, 12@13. Extracted, 7½@8½, according to quality. We can see no reason why these prices should not be well maintained right through the season, and advise shipping. Blake, Scott & Lee,
Oct. 26. 31, 33 Commercial St., Boston, Mass.

New York.—Demand for comb honey good; supply light; prices remain firm. Fancy white, 1-lb. sections, 16@17; A No. 1, 16; No. 1, 15@16; No. 2, 13@14; mixed, 11@12; fancy buckwheat, 11@12; No. 1, 11; No. 2, 9@10. Extracted white, 8@8½; light amber, 7½@8; amber, 6½@7; buckwheat, 6. Beeswax, demand limited, 27@28. Chas. Israel & Bro.,
Oct. 20. 486 Canal St., New York City.

New York.—Honey is arriving more freely; sufficient stock on hand to supply present demand. Fancy white, 15@16; No. 1, 14@15; No. 2, 12@13; buckwheat, 10@11. Extracted in good demand, white, 7½@8; light amber, 6½@7; buckwheat, 5½.

Francis H. Leggett & Co.,
Franklin, West Broadway, and Varick Sts.,
Oct. 20. New York City.

Schenectady.—There is a brisk demand for comb honey, and stock sells on arrival, at following prices: Fancy white, 16@17; No. 1, 15@16; No. 2, 13@14; buckwheat, 11@12. But very little demand for extracted except in small glass packages suitable for table use. We quote white, 7@8; dark, 5½@6.

Chas. McCulloch,
Oct. 20 Schenectady, N. Y.

Denver.—A No. 1 white comb honey, $3 00@$3.10 per case of 24 sections; No. 2, $2.65@2.75. Extracted No. 1 white, 7½@8. Beeswax, 20@24.

The Colorado Honey Producers' Assn.,
Oct. 11. 1519 Wazee St., Denver, Col.

Detroit.—Fancy white comb, 15@16; No. 1, 13@14; amber and dark, 10@12. Extracted white, 7@8; amber and dark, 5@6. Beeswax, 26@27.
Oct. 22. M. H. Hunt & Son, Bell Branch, Mich.

Wanted, Honey and Beeswax.—We have a tremendous and growing trade in this line, and should like to hear from all having such goods to sell in any part of the country, with quantity, description, and lowest cash price.
Thos. C. Stanley & Son, Fairfield, Ill.

Wanted.—Comb and extracted honey. State price, kind, and quantity; also rate of freight to Boston.
Blake, Scott & Lee,
31 and 33 Commercial St., Boston, Mass.

Wanted.—Extracted honey. State quantity and price. We pay cash on delivery. Reference, Wisconsin Nat'l Bank. E. R. Pahl Co., Milwaukee, Wis.

Wanted.—Comb and extracted honey. State price, kind, and quantity. R. A. Burnett & Co.,
163 South Water St., Chicago, Ill.

Wanted.—To buy comb and extracted honey. What have you to offer? State price and quantity.
Ed. Wilkinson, Wilton, Wis.

For Sale.—1000 lbs. extracted honey in one-gallon tin cans, at 8½ cts., f. o. b. here. Sample free
R. H. Bailey, Ausable Forks, N. Y.

Gleanings in Bee Culture

[Established in 1873.]

Devoted to Bees, Honey, and Home Interests.

Published Semi-monthly by

The A. I. Root Co., - - Medina, Ohio.

A. I. ROOT, Editor of Home and Gardening Dep'ts.
E. R. ROOT, Editor of Apicultural Dept.
J. T. CALVERT, Bus. Mgr.

TERMS. $1.00 per annum; two years, $1.50; three years, $2.00; five years, $3.00, *in advance;* or two copies to one address, $1.50; three copies, $2.00; five copies, $3.75. The terms apply to the United States, Canada, and Mexico. To all other countries 48 cents per year extra for postage.

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RATES OF ADVERTISING. These will be furnished on application.

Special Low Offers.

Trial Subscriptions.

3 Months, 15c; 6 Months, 25c.

We offer GLEANINGS IN BEE CULTURE to new subscribers three months for 15c, or 6 months for 25c. Renewals not accepted at these rates.

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As an inducement for our subscribers to renew promptly, which saves us considerable time, we offer the following rates for Gleanings one year and a year's subscription to any of the following papers at prices named:

For One Dollar Only.

Gleanings and your choice of the following:
American Agriculturist, with Almanac,
Orange Judd Farmer, with Almanac,
N. E. Homestead with Almanac,
Farm, Furnace, and Factory,
Northwestern Agriculturist,
American Poultry Journal,
Reliable Poultry Journal,
Agricultural Epitomist,
Am. Poultry Advocate,
Farm and Fireside,
Poultry Monthly,
Poultry Keeper,
Farm and Home,
Farm Journal,
Farm Poultry.

For One Dollar and Ten Cents.

Gleanings and your choice of the following:
Woman's Home Companion,
Practical Farmer,
Michigan Farmer,
Kansas Farmer,
Ohio Farmer,
Indiana Farmer.

For $1.25.—Gleanings and Rural New-Yorker.

For $1.30.—Gleanings and National Stockman and Farmer.

For $1.50.—Gleanings and Cosmopolitan or McClure's Magazine or American Gardening or N. Y. Christian Herald.

For $2.00.—Gleanings and Country Gentleman or Pacific Rural Press.

For $2.50.—Gleanings and Review of Reviews.

For $3.00.—Gleanings and Scribner's Magazine or Scientific American.

SPECIAL NOTICES BY BUSINESS MANAGER

COMB HONEY.

Very little left to offer. Some extra-fine fancy Michigan white-clover in 12-lb. cases, at 17c per lb.; fancy amber, 15c. A few cases of the Colorado still on hand at same price as Michigan clover.

BEESWAX WANTED.

We should like to hear from those having beeswax to dispose of. We want to increase our stock before winter sets in. Those having any to sell or exchange for supplies of any kind will do well to write us, or to ship at once. We are paying 26c cash, 28c in trade, for average wax delivered here.

HONEY MARKET.

Since our last report we have made a good many sales, and have had numerous inquiries. The demand continues. We are putting up extracted honey in No. 25 jars, 2 dozen to a case, holding a full pound each at $2.25 per dozen, the No. 100 jars holding 14 oz. at $2.00 per dozen, and have been having quite a nice trade. These prices are somewhat higher than we have been selling at, but none too high for choice white-clover honey at present values. Extracted honey retails readily in England at a shilling a pound, put up in pound bottles, and some of Selser's trade get as much as 30c retail for a pound bottle. We have the following lots on hand to offer, subject to prior sale.

EXTRACTED HONEY.

We have on hand the following lots:

No. 35.—Basswood, very fine, in gallon cans, 8 cans in a case; case lots at 10 cts. per lb. Only 5 cases left.

No. 45.—White-clover honey in five-gallon cans, two in a case. Price 10 cts. per lb. Only 15 cases of this on hand. Very fine.

No. 61.—Colorado alfalfa. Very light color, and heavy body; 9½c per lb.

No. 68.—Texas honey, light amber, 20 cases. Price 8½c per lb.

No. 71.—Six cases sweet clover in 60-lb. cans; 9½c per lb.

We have bought a carload of basswood honey in barrels of 360 lbs. This we can furnish at 9 cents per lb. in barrel lots. All lots offered, subject to previous sale.

BICYCLES IN TRADE FOR HONEY, WAX, OR CASH.

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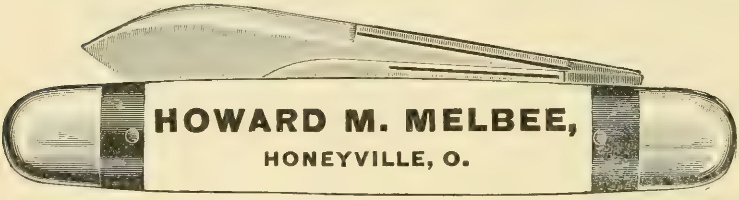

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GLEANINGS IN BEE CULTURE

A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS

ILLUSTRATED SEMI-MONTHLY

Published by THE A. I. ROOT CO.
$1.00 PER YEAR MEDINA, OHIO

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STRAY STRAWS FROM DR C. C. MILLER

SEVEN LAYING QUEENS in one colony are reported in *Meheszeti Kozlony*. To a colony with two queens superfluous queens were given till seven were present.

SOMETIMES the beginner is confused about the names of the young bee in its different stages. First the egg for about three days, then the larva for about five days, then the pupa, or chrysalis, until the imago, or perfect insect, emerges from the cell.

A FLY-KILLER that has been doing very efficient service at our house is made as follows: A piece of wire cloth 15×6 inches; two sticks 12 inches by ¾×¼. Nail the two sticks together after putting 3 inches of one end of the wire cloth between them. Other measurements will answer. With such a weapon you can bring down your fly every time by whacking against wall or window, and never a dirt-spot left.

THE STATEMENT has been made that it is the workers that stop brood-rearing in the fall, and not the queen. Pointing that way is the fact that in many cases I have found sealed brood and eggs in a colony, but no unsealed brood. Apparently the queen kept on laying, but the bees wouldn't hatch the eggs. [I have observed the same thing you have, many and many a time; and I believe it is true that the bees are the first to curtail brood-rearing. —ED.]

A SURE METHOD of introduction is thus given in *Le Rucher Belge:* Cage the old queen at least 12 hours, between two combs in the center of the hive. Take her out of the cage, and replace her immediately by the new queen, putting the cage in the same place as before. Twenty-four hours later the acceptance will be certain, especially late in the season. That "especially late in the season" suggests a doubt as to the universal success of the plan.

THE CONTINENTAL bee-journals do not speak in complimentary terms of the apiarian exhibit at the Paris Exposition, always excepting the display of The A. I. Root Co. They say they were scattered all over, instead of being massed in one grand display in one place. [We have not yet announced it, but we got the gold medal for our exhibit at the Paris exposition.—ED.]

"WHEN TWO QUEENS are contending in deadly hatred, if they get into a position which enables each of them to deliver the mortal thrust of her sting, they recognize the danger and instantly separate, lest by mutual slaughter the hive should be left queenless."—*London Telegraph.*—The *British Bee Journal* says that, while this is true, such contingencies rarely occur. One may be allowed to register a doubt as to such considerateness on the part of two queens fighting mad. The old theory that two queens can never get into such position that both can sting at the same time seems more reasonable.

THE PLAN you give on p. 804 for preparing bee-feed, Mr. Editor, is very simple. I wonder if you wouldn't like to simplify still further by using the plan I have followed for several years. Simply pour the dry sugar in the feeder, then pour in the water. No need of mixing in extractor. [Your plan may be all right, but with us it messes up our feeders too much. We want the feed so prepared that bees can lick the feeders clean without leaving a residue of sugar or crystals; and the only way of accomplishing this is to make the syrup thin, mixing the sugar and water thoroughly by means of an extractor.—ED.]

THE THEORY was strongly urged a few years ago that the safest way to winter bees was with sugar syrup so as to be rid of all pollen. Now comes W. Beyer, in *Centralblatt*, and avers that it is an impossibility to bring a colony through winter and spring without pollen. Without pollen the brood dies, and also many bees. He quotes good authorities in proof. [In late years we have paid no attention to this matter of pollen, and I doubt whether there are any bee-keepers who have wintered bees more successfully than we have here at Medina. I believe bees will winter with and without pollen providing they are properly protected, and the winter is not an extraordinarily severe one.—ED.]

JUST FOR THE SAKE of keeping up a fight with you, Mr. Editor, I'll reply to a footnote, p. 798. You think one would scarcely credit the notion that the covering of a seed would resist acid as well as an egg-shell. Put an egg and a honey-locust seed in strong vinegar, and see which will be most affected. Or, put both in boiling water for a minute or two, and see which can produce a growing thing. Bacilli and their spores are like a good many other plants and their seeds, the plants much tenderer than the seeds. A good many seeds may be thrown in boiling water for a short time without injury, whereas the plant would not stand it a second.

I'M NOT GOING to Cuba. Various discouragements might be endured, but when it comes to three separate cases of hives absconding, as related on p. 805, that's just a little too much. Bad enough to have a swarm take French leave; but to see a hive up and off is going too far. [Just what we knew you'd say, doctor. You see, Mr. Somerford was speaking of a hive by way of metonymy —putting the vessel for the contents, just as you would say a man is addicted to the "bottle" instead of what is in it. Bee-keepers generally speak of colonies of bees either as "hives" or "swarms," even when they do not mean that the bees are swarming. We wish they would always make a discrimination here. We have intended to change the words ourselves, for sometimes the word "swarm" is positively misleading.—STENOG.]

YEARS AGO G. M. Doolittle put me on the plan of caging the queen when a swarm issued, destroying queen-cells five days later, and after five more days destroying them again and releasing the queen. I've always felt thankful for it; and if I had only a single apiary with some one to watch for swarms I might never have given it up. Now Bro. Doolittle depreciates the plan on p. 808, saying it loses 40 to 60 pounds of honey. I can't believe it does here. The bees go right on storing with very little check, filling up the brood-combs, and then when the queen begins laying the honey is all rushed upstairs. [I have tried the Doolittle plan; but in every case it has seemed to me the bees did not do as good work after the queen was caged or removed as before; but one of my neighbors, Mr. U. Prince, has tried the plan, and the last I knew he was still using it, and considered it the best way to manage swarming at outyards. Mr. P. H. Elwood, one of the most extensive bee-keepers in the world, was also practicing it at the time of my last information.—ED.]

MR. WARDELL has found it an advantage to leave cushions on top of the supers or brood-nests all summer, p. 798. Sure. It is a decided advantage to have the hive covered summer and winter with a cushion or some other good non-conductor of heat. It keeps the hive cool in summer and warm in winter. The objection to a cushion is the trouble of an extra piece, the extra expense of a cover to contain it, and the space occupied in winter in cellar. What we need, and what we should have, is a cover with an air-space, making the cover itself a non-conductor. I'm now using dilapidated covers that I can't burn up yet, just because no manufacturer offers a satisfactory hive-cover. I've 50 covers made with air-space and covered with tin, and they're the best I ever had; but I don't like to order odd goods. I've one cover covered with peculiar paper, and painted, and perhaps the paper is as good as tin, but the cover has only one layer of wood, and I defy you to make covers of that kind without some of them twisting so as to let bees through. Both for non-conductivity and for straightness, there must be two layers of wood. [Perhaps you are right, doctor; but if you will tell us how to make a good air-space cover that will not twist, and that will please others as well as yourself, we shall be under everlasting obligation to you. Perhaps the style of the 50 covers you refer to is all right; but you know it is expensive, and will bee-keepers pay the expense of the tin? —ED.]

PICKINGS
FROM OUR NEIGHBOR'S FIELDS.
BY STENOG.

Indian summer now is here,
Loveliest season of the year;
Just a glimpse of smoky haze,
Then the reign of wintry days.

AMERICAN BEE JOURNAL.

The editor, Mr. G. W. York, has been nominated on the Prohibition ticket as recorder of deeds of Cook Co. In view of the fact that in the neighboring city of Cleveland nearly all if not all of the city council are in criminal court for bribery, it seems a pity that such men as Mr. York—men of ability and uncompromising honesty—can not have control of public affairs instead of such men as the slum vote gives us—men who care nothing for office except as a means of plunder. But there's a "Recorder of deeds" overhead who will make this all right some day.

BRITISH BEE JOURNAL.

While the following was not clipped from our London cotemporary, I put it here because it came from that city, and also in hopes we may learn more about it:

> There are few people in the heart of London who keep bees, and the Baden-Powells stand absolutely alone in having an apiary in their drawing-room. Surrounded by costly works of art and priceless bric-a-brac, standing on ornamental alabaster pedestals close to the great organ which takes up all one wall of a lofty room overlooking Hyde Park, are two large straw bee-hives, with great glass windows that allow the bees to be seen at work within. The bees do not, of course, fly about the room, but they escape into the outside world through a pipe leading out of a window.
>
> These bees are truly wonderful insects—the very aristocracy of their kind—and they are made to do much work which bees, uncontrolled by such an ingenious mind as that of Colonel Baden-Powell, have never dreamed of. Wooden models of various objects, such as bicycles, for instance, are placed in their hive, and the bees build their honey-comb upon them in the exact shape required. At the present time they are busy building a wax model of the colonel's bomb-proof quarters at Mafeking.

The Basingstoke bee-case is stirring up as big a hornet's nest as the Utter case here. The statement of the matter by the London *Standard* is so laughable as well as instructive that I give it here:

> Somewhere in the neighborhood of Basingstoke a wood-dealer occupies a field adjoining the garden of the local postmaster, who keeps bees. Part of it he mows, and part is grazed by an "old mare"—that is to say, he designed to mow it, and he turned out his old mare to graze, but the ferocity of the postmaster's bees ruined either project. When the laborers entered with their scythes the flying squadrons of the enemy assailed them in such force that they hastily withdrew, and the poor mare, unable to withdraw, perished in the field So the wood-dealer appealed to Basingstoke County Court, claiming damages, first, for his murdered steed; second, for the loss of hay; third, for extra labor, inasmuch as he was obliged to move his rick; fourth, for his personal sufferings. And the Judge decided in his favor for the whole amount, saying that "a person keeps bees at his own risk, and if they do damage he is liable." We suspect that the worthy Judge has not heard the last of this case. Bee-keepers are patient and amiable folk, but, like their interesting charges, they can protect themselves.

The English bee-keepers are raising a fund to contest the case.

* * *

Mr. W. P. Meadows attended the Paris convention, and has this to say:

> I wended my way to the hall, thinking I might be interested in the proceedings; instead of which it was my misfortune to remain seated while several papers —no doubt relating to important bee-matters—were read. I was, however, pleased to meet Messrs Calvert and Dadant, of America, and Mr. Taylor was also there. At the close I was asked to attend a banquet, and friend Calvert was much amused at my answer, which was: "No, can not waste time like that, this morning is sufficient." My knowledge of French being extremely limited, I did not see amid numberless items of interest everywhere around—and very limited time to see them in—that it was worth giving time either to feast or be talked to. Nor was I pleased with the bee-exhibits—indeed, I should have been sorry to face a "Royal" show with all the appliances seen there on my stand—in fact, none of them equaled our own manufacture—a strong statement may be, but if any English bee-keepers saw them they would bear out my remarks.

* * *

Quite a tragedy occurred at the recent honey show at Bidston. An eye-witness says:

> The judge was the Rev. J. F. Buckler, rector of Bidston, who was just completing his labors, and had scarcely formed a satisfactory judgment upon the single 1-lb. jars, when a severe thunderstorm, which had been raging for over an hour, changed suddenly to a terrific hurricane from the north-west.
>
> All hands tried to save the honey by laying it upon the grass under the staging, but in the midst of the work the tent-poles snapped like twigs, and the tent came down, burying the workers in its folds. As the hurricane continued all the rest of the day, nothing more could be done, except to crawl from underneath the wet canvas. On the morrow what a wreck met the eye! Every tent on the ground, save one, had been leveled. The bee-tent lay as it had fallen. Luckily, most of the honey had escaped much damage, except the second-prize sections It was useless to attempt any further exhibition, especially as the bees from the examination and lecturer's hives became troublesome. So the honey was packed up as speedily as possible and consigned to its owners. A more disastrous show for every one concerned has never taken place. Thunder, lightning, torrential rain, and howling gales marked all the time the show was open, and we understand there has been a loss to the Society of about £2000 on the show.

BULLETIN DE LA SOMME.

I translate the following suggestions from this French journal, as I believe them to be good: "Mix half a teacupful of honey with the juice of one lemon. Take from time to time two tablespoonfuls of this mixture, as hot as it can be endured. If the stomach will not retain the honey, take two or three tablespoonfuls of milk."

Here is something further relative to the use of honey: "Honey, by its cleansing properties, being slightly laxative and purgative, prevents constipation, and is very good in cases of inflammation of the stomach, and even of the bladder. There is not, says Dr. Guerin, a more suitable medicine for intestinal fevers, and he adds that honey should be the special food of persons inclined to be feverish.

AUST. BEE BULLETIN.

The editor says the cry about the home market not being tried is getting to be stale. He adds:

> Not only have bee-keepers themselves been shipping honey to England, but good business men, with reputations at stake for their honesty and integrity, in Sussex Street, Sydney, or elsewhere, have also been shipping tons away. Let us also bear in mind what is going on in Great Britain. There a lot of comfortable, well-to-do people have dropped on to bee-keeping in the goody-goody style. Royalty has also been called in to further the great cause, and bee-keeping and bee-keepers' associations are springing up all over the country. A spirit of antagonism is fostered also against all foreign honey. Before long honey will be as cheap in England as it is in New South Wales.

GENERAL CORRESPONDENCE

GROWING CLOVER.

First Prize Article.

BY WILLIAM ROBINSON.

There have been several articles lately in GLEANINGS on alsike clover. I have been familiar with this plant several years, and will give you my experience with it, both as a farmer and bee-keeper. It is the hardiest of all the clovers, thrives on almost any soil, but gives better results in soils containing some clay than in sandy soil. It makes a luxuriant growth in land too wet to grow red clover at all. The roots do not heave out of the ground in spring, as other clovers often do; therefore it has never been known to winter-kill in our locality, while last winter fully ninety per cent of the red clover here was killed. Some fields near me were sown two years ago with red and alsike mixed, half of each; but now very few plants of the red clover are to be found in those fields, while the alsike still flourishes as though it were a native of the soil.

For sowing with timothy it can not be equaled by any other variety. This combination makes as heavy a hay crop as any; but the advantage of the alsike is it is as easily cured as the timothy, and retains its beautiful bright green color in the hay, which is sometimes difficult to get in the red varieties. It remains green and succulent for a long time after the seed has fully matured, so it does not require harvesting "just at the right time," as is the case with other varieties.

As to its feeding value, I think it superior to any other kind, and my neighbors all agree with me on this point. The stalks, not being coarse and woody, it is eaten absolutely clean by all kinds of stock—no waste.

Some farmers claim it does not make as good an after-growth as the red during dry seasons; but I can see no great difference in this respect. The dairy farmers in some parts of this State prefer to mix the seed in equal portions, claiming the best results in this way.

The seed may be sown on spring grain. This gives best results in our part of the State with all varieties of clover. Good catches are also usually had by sowing on winter rye or wheat in early spring before the frost is all out. We also sometimes sow on old timothy meadows with good results in early spring.

Mixed with timothy, 4 pounds per acre of the alsike is sufficient; alsike alone, 6 to 8 lbs. per acre, or about half the amount usually sown of other kinds. I have four acres, sown two years ago, 6 lbs. to the acre, and the clover now stands a little thicker on the ground than I like it.

Those who will sow red clover should always mix some alsike with it. The alsike, being more hardy, occupies the spaces where the red fails to grow. When we sow with timothy we sow 2 qts. of alsike and 6 of timothy per acre.

This season, up to June 27 we had the worst drouth ever known in this part of the State. Under these unfavorable conditions the alsike made the best and largest hay crop of all our grains. This, it seems to me, would indicate it would do well in warmer climates than ours.

Alsike clover is the best honey-plant we have in Northern Wisconsin. I have never known it to fail to yield nectar abundantly since it was first grown here, about ten years ago. During our severe drouth last June it was the only plant here our bees worked on, white clover being an entire failure with us. My 42 colonies stored 30 lbs. each from the first crop. Since July 1 we have had abundant rains and warm weather, and the bees have been working on the after crop the past ten days, and are still storing honey from the alsike. My plan has been to encourage my neighbors to sow alsike by making a present to each member of the family a nice section of alsike honey, telling them that it was a small portion of the honey my bees gathered from their clover. All bee-keepers should so encourage their neighbors by giving them a taste of honey or by donating at least seed to give it a trial.

Chapman, Wis., Aug. 11.

GROWING CLOVER.

Second Prize Article.

BY WM. W. CASE.

As the growing of clover in itself is one of the most important elements in successful agriculture, so, perhaps, is of like importance the best method of growing and propagating the same. The ordinary red clover is all right in itself when it takes and grows and does not freeze to death the first winter; but it is uncertain, to say the least. The objections to the mammoth are too well known to be enumerated here. In itself the alsike is much more likely to take, being scarcely affected at all by so-called "clover-sick" soils; and owing to its rooting qualities it is many times less liable to damage from freezing out. It is, however, open to the objection that, as usually cared for, it gives no after-growth or second crop, for the reason that it is not cut until after the seed is produced, it being fully fertilized by the honey-bee, while the red does not produce seed until late in the season, as Dame Nature has to take most of the season to raise the proper number of suitable insects for its pollination, when, like all the clover family, it does not again grow up. This disadvantage may be overcome by cutting when about half done blossoming, but this process ruins the prospect for honey.

The successful method of growing clover as perfected in our county, mainly through my own efforts and perseverance, is as follows:

At the usual time of sowing clover in the spring on wheat and rye, mix red and alsike clover seed in the proportion of 2 lbs. of red to one of alsike, and apply with timothy, 2 lbs., at rate of not less than 6 quarts to the acre, and as much more as experience with your own peculiar soils shows will make a heavy stand. Should the first trial prove a failure, if necessary, furnish the farmers seed at half cost for a second trial, and eventually you will get an alsike convert who would not do without it even if the seed cost $30 per bushel. In the following hay crop, without interfering with the red crop in the least, it will, on the average, add 40 per cent to the yield of hay, while the second crop of red will follow as though no alsike had been grown. I have frequently seen it grow to a height of 20 to 24 inches the first season after removal of the wheat or rye.

Fully three-fourths of the clover sown throughout this section of country contains its proper share of alsike; and as practically all the red clover froze to death last winter, and scarcely none of the alsike, next spring will see a far higher per cent of alsike sown than in the past.

I have two neighbors, one on either side of me. One said at last haying, "I gained fully half of my hay crop from the alsike;" said the other, "My hay crop was far short of what it would have been had I sown alsike," he thinking he had not time to drive ten miles for the seed. Each said, "All my red clover froze to death."

As a stock feed, alsike clover has no superior, if any equal, in the country. The stem is fine and entirely smooth, and is entirely eaten by stock, while the red is frequently coarse and dusty, and always highly pubescent. As a nitrogen-gatherer it is the equal of any clover grown. As a honey-producer it is the equal of any honey-plant in the northern States; while as a hay crop it is the superior of any other clover known, here frequently obtaining a height of from 30 to 36 inches, and so thick that a cat has a hard time to make her way through it, and it is practically frost-proof.

It usually takes well when sown with oats, and is sometimes sown as follows with most excellent results: Plow oat stubble as soon as the crop is removed, and harrow lightly once a week from Aug. 20 to Sept. 1, when sow to alsike, red, and timothy, in the proportions given, giving frequently crops of hay the following June as heavy as 2½ to 3 tons per acre. Such sown grass should, however, have applied, at time of seeding, 300 lbs. per acre of the following plant foods: Nitrate of soda, 50 lbs.; tankage, 150; acid phosphate, 700 lbs.; muriate of potash, 100 lbs.

In 1888 The New Jersey State Fair awarded first premium on mixed hay to J. H. Denise, Freehold: yield from 65 acres, 185 tons at one cutting; timothy, alsike, and red clover; aftermath was left on the field.

Baptisttown, N. J., Aug. 20.

GROWING CLOVER.

Third Prize Article.

BY HARRY L. SMITH.

Of all the forage-plants which we produce here in the East, there are none that equal the clovers in value. For feeding they furnish a food rich in protein (the most costly part of the ration), and easily digested; as a crop for green manuring they add to the supply of nitrogen in the soil, being able to gather it from the air; and for pasture they can not be excelled as long as we can keep a stand of plants. The common practice in this section has been to use about one-third red clover in seeding to grass; but experiments upon our farm have proved to us that we get more hay, and a much greater feeding value, by using more clover; about one-third red and one-third alsike clovers, the rest timothy and red top.

The first year we get two crops of clover in which but little else will show; but during the following winter, fully half of the clover-plants die, and the timothy and red top take possession and feed upon the decaying roots, giving us a good crop of hay for two or three years. On our heavy clay soils we sow enough alsike to take the place of the red clover, as the latter will rarely make a stand. On moist fertile soil we can produce alsike three feet tall, and it will stool out so thick that it will form a perfect tangle; and how the bees revel in it! It seems as though all the bees in the neighborhood were there. If it is cut when it first begins to bloom we may expect a second crop, but not otherwise, for alsike is a biennial; and if it is not cut before it comes into full bloom the most of the plants will die. If the summer is moist, red clover will produce a second crop even if the first is not cut until the heads begin to turn brown. By seeding with both alsike and red clovers, and not cutting the first crop until it is in the height of bloom, we get a larger first crop; then the red clover will take possession and give us as large a second crop as though it had been used alone in seeding. Clover likes a mellow soil, so we plan to have it follow some crop which leaves the ground light and friable.

White clover is far the best for use in pastures, as its habit of creeping along the ground and rooting at every joint enables it to form a sod which will stand the tramping and feeding of cattle. In many old pastures it may be introduced by simply sowing the seed on the surface of the ground during a moist season.

East Dixfield, Me.

[When Ernest told me he had offered ten dollars for the best article on growing clover, and that he had limited the writer to so many words, I replied that the subject could hardly be touched in such space. The subject of growing clovers alone would make a good-sized book, and, in fact, we have one such book, but I fear it has not had a very extended sale. Growing clover is almost the foundation of successful farming—if not the world over, at least over a great part of the United States. I am pleased to know that our friend from New Jersey says they get a successful stand of the clovers when the seed is put in during the latter part of August. This agrees with what I have so fully written up about growing clover in the Traverse region, in Michigan. In answer to the query, "Does red clover always contain honey?" it may always contain some; but in some seasons, and at certain times, the amount is so small it can scarcely be discovered. I am glad to note that all three writers take so strong a stand in favor of mixing alsike with the other clovers. Many farmers nowadays grow clover only to enrich the land; in fact, that is *our* custom. We do not cut it at all, and do not pasture it at all. When grown for this purpose alone, is there an equal need of putting in some alsike? and is a mixture of red clover, alsike, and timothy worth more to plow under to enrich the land? Where it is grown for no other purpose, the mammoth is unquestionably worth more than any of the others. This year our ground is seeded to mammoth, and no other, and the growth is certainly stronger and more luxuriant for the time of year than I have ever had with red or alsike.

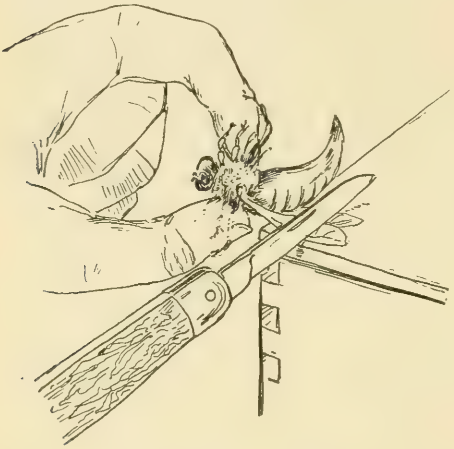
Clover grown as we grow it, solely for improving the soil, is all right for honey, for we seldom plow it under until it is in full bloom, and some of the heads begin to turn brown. The largest crop of buckwheat we ever grew was where we turned under mammoth clover so late it was already full of seed. A neighbor told us the clover seed on the land was worth more than we would get for our buckwheat; but he was mistaken; and from this experiment I am inclined to think that clover is worth more to plow under when it contains some seed nearly or quite mature than at any other period. An allusion is made in one of the articles to "clover sickness." Some of our best authorities, however, Terry among them, think this is only a notion. They say that, after having grown clover on their ground all their lives, they find no trouble in growing it still, where it is intelligently managed.—A. I. R.]

QUEEN-CLIPPING.

How to Do it With a Dull or Sharp Knife.

BY S. E. MILLER.

Friend Ernest:—I am a little surprised by a late number of GLEANINGS to see that you and Dr. Miller do not know the correct way to clip a queen's wings, so I suppose I shall have to tell you both, as well as the other readers of GLEANINGS



[I am not sure whether I read this way of clipping in GLEANINGS some years ago, or whether I simply adopted it because it is the surest and most convenient way, and seemed to come most natural. Your way of holding the queen is all right, except that I have an idea you hold her upside down. Try this way the next time you clip a queen:

Hold her by the thorax between thumb and first finger, with her legs or under side toward your face, her head toward the palm of your hand, and her sting pointing out away from your hand. Held in this position she will grapple with her feet for something to get hold of, and will invariably curl her abdomen up so that her sting points about toward your face, thus leaving her wings standing out away from her abdomen. Now place her wings on a smooth hive-cover, close to the corner nearest to you (the edge of a hive-body will do as well). Lay the small sharp blade of a knife across her wings, give a little pressure downward, and it is done.

Every bee-keeper should at all times have about his person a pocket-knife with at least one sharp blade; but it is not every one who always has a pair of scissors in his pocket of convenient size and shape for queen-clipping. This latter is the main point in favor of my method; besides, there is not the least danger of ever clipping a leg off, as you deliberately place the edge of the knife-blade across her wings (which are then between the blade and the hive), before making the clip, and there is no chance of her getting a leg beneath the blade.

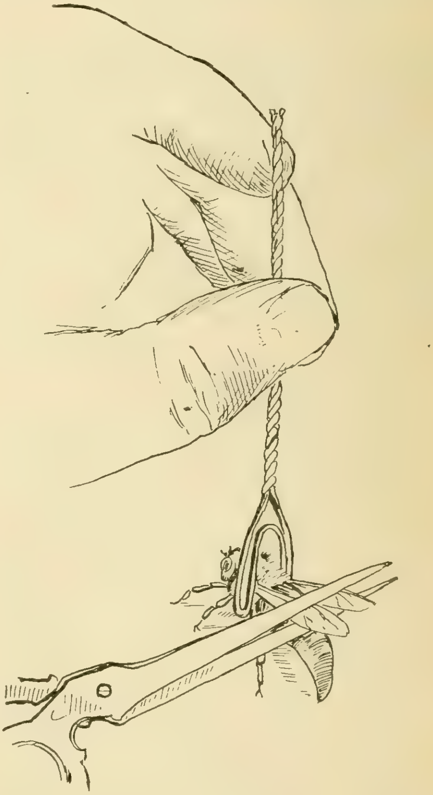
Now, you and the doctor try this way and report. I will try to make a rough drawing, which you can probably have an artist improve on and illustrate if you like; or you might go through the performance and have some one kodak you.

Bluff on, Mo., Aug. 29.

[You saw the plan which you describe, and which is here illustrated, probably in the A B C of Bee Culture; for in that you will find the exact *modus operandi* given in full. While it is no new plan to Dr. Miller or myself, it is a very good one. But when we talk about the *best* way, then in my opinion the same manner of holding the queen, using scissors, is better.—ED]

ANOTHER METHOD OF CLIPPING.

I noticed in GLEANINGS several persons telling of different ways to hold queens to clip them. I send you a sample of a little device of my own for holding queens to clip them. Any one can make them by taking a piece of wire, a pair of wire-pliers, and a spike to bned the fork over. When I use them to catch the queen I just lay the frame with queen in on top of the hive, and slip the fork astraddle of her back. If the fork is too close or too wide,



adjust it to fit. I find it more convenient than catching her by the wing or leg. A. B. C.

Morris X Roads, Pa., Aug. 16.

[I think I should prefer to use my fingers. —ED.]

CUBAN BEE-KEEPING.

BY HARRY HOWE

October 3d I landed in Cuba from my trip up home, and began to ask questions of the bee-keepers. There had been very many changes. Some had increased, some had lost, but all were sure that "next year" they would get that big crop.

Foul brood is spreading. One of my neighbors fed some bad honey by mistake, and went from 250 to 125 in two months. Another went from 100 to 10 in the same time. My nearest neighbor lost 300 out of 700, and so it goes. Another neighbor brought 27 from Florida in April, and now has 75 strong colonies ready for the harvest.

Prospects are good for a crop. We have had plenty of rain, and the vines have made a good growth. My own prospects are not so good. Owing to sickness I could not attend to the bees, and so lost considerable during the summer. This was also partly due to making increase too late in the spring. I did not get my new hives from the States in time to make the increase when it ought to have been done. Now, however, I have plenty of supplies, and am again able to work, and it will not be long before I shall have things moving again.

At present I am "batching" it in a palm house. It is a lonesome way of doing, but I hope to have another bee-keeper with me during the winter.

I have a big banana-patch, and shall also have all kinds of garden truck all winter, so it is not so bad as it might seem. Fried ripe bananas are about as nice as one can ask for.

There is a difference in location even here. My outyard is in very much better condition than the home one, yet it was made last June from a lot of the poorest nuclei that I had here, and has had scarcely any attention since.

West. Wright. Stevens. Stuart.

THE FOUL-BROOD INSPECTORS OF NEW YORK STATE.—SEE EDITORIALS.

Bees are swarming some now, but the principal swarming season is in the spring. I hived one this morning at 6:30. The bees are working strongly at sunrise, but stop about ten o'clock. Later on they will not get up so early.

I had a six-weeks' trip up home, but spent three of them in a hospital, and did not even get to see my own apiary at West Groton. However, that did not matter, as no one there got much if any honey.

Artemisa, Cuba.

A NEW MANAGEMENT FOR COMB-HONEY PRODUCTION.

How to Brush Swarms; Do they Work with the same Vigor as Natural Swarms? Swarming Under Control.

BY L. STACHELHAUSEN.

In my article, Dec. 15, 1899, I explained why another management is necessary for comb-honey production. For my management a two-story hive is needed. In spring we manipulate our hives in any of the recommended ways. To get a colony as strong as possible for the honey harvest, the brood-chamber is enlarged at the right time by giving a second or third story. So we get all advantages of large hives, and in 99 cases out of 100 such colonies will not swarm, according to my experience of 15 years.

As soon as the honey-flow commences, and the time arrives when we think it is best to set supers with sections on top of our hives, a hive is prepared with starters only. We bring it to the hive selected for the new manipulation. The old hive is removed from the bottom-board, and set aside to be handy for the following manipulation. The new hive is set on the old stand, and an empty hive-body on top of it. In all these operations I use smoke, and handle the bees somewhat roughly to cause them to fill themselves with honey. One of the brood-combs, with bees and all, is put into the new hive, and then all the bees are brushed from every frame into this hive. The most important thing in this operation is, that the bees fill themselves with honey. A little sprinkling with a solution of sugar in water can be used if the bees do not suck up the open honey.

The combs from which the bees are brushed into the new hive are assorted into different empty bodies near by—brood-combs, honey-combs, or empty ones separately. It is not necessary to look for the queen. She is brushed into the hive with the other bees.

At last we remove the empty body, lay a queen-excluding honey-board on top of the new hive; and a super with sections (containing preferably full sheets of foundation and some bait-combs) is set on top of this, and the hive is closed.

Some time the next day, when the bees have commenced to build combs, the lower story of the brood-chamber is removed; and if the colony has not room enough, another section-super is given. At the same time I remove the brood-comb, which had no other purpose than to induce the bees to accept the situation with less disturbance. This brood-comb is not absolutely necessary. The colony is now managed exactly as by Hutchinson's method.

What to do with the brood-combs? I have used them so far in forming or strengthening nuclei, and the nuclei plan is the only one by which I have increased my colonies for many years. The first bees coming out of this brood will be field bees about 18 days later; the last one, 39 days later. It depends on the duration of the honey-flow whether these young bees are more useful in the nucleus or in this hive. It is not difficult to utilize them partially or all in the swarm by using Heddon's method of preventing after-swarms. I will not describe how this is done, as every bee-keeper knows it. At any time inside of 21 days we can brush all the bees in front of the swarm.

I mentioned the queen-excluding honey-board. In my locality it is not necessary to use it. I never had any trouble with brood or pollen in the sections; it is an advantage if we can dispense with this honey-board. A similar way is recommended by Mr. Danzenbaker in his book "Facts about Bees." He is very near to it; the only difference is, he says we have by all means to wait till the colony has commenced queen-cells. This is a mistake. If a strong colony has any drone brood it is in a condition in which it can be swarmed. I recommended the forming of brushed swarms about 15 years ago, in the *American Apiculturist*, and made them on the old stand as well as on a new stand in uncounted numbers, with the result that these swarms always worked with the same vigor as natural swarms, so I know what I say.

For this management I prefer a Heddon hive with 10 frames in a body. Two of them have the same capacity as a Draper barn. It is just as well to use two of Root's 8 supers with 10 frames, but the top-bar of the frames must be made ⅞ inch instead of 1⅛ in. wide. These wide top bars work just like a queen-excluding honey-board, and are of more hindrance for expansion of the brood than too small a hive. In these shallow bodies we are not troubled with brace-combs, and this is the only reason for their use. I use the same super, two or more for the brood-chamber; but my frames are fixed in another way, but this is of no importance.

With the 8 frame hive and the Danzenbaker hive two bodies are somewhat too large for the brood-chamber. This is no disadvantage during the spring development. During the honey-flow they would be better if smaller. It will be difficult to get them to build out with natural worker-combs only, and no drone-cells.

If one of the half-stories containing 10 frames with starters is given to this swarm, the bees will fill them with worker-combs; and, according to my experience, these combs do not cost any thing. As soon as necessary, another half-story containing full sheets of foundation is given under the first one, all according to Hutchinson's method.

The advantages are, that we can get colonies for the honey-harvest as strong as possible, with less work, than by any other plan, and can use all the field-bees raised for the honey-harvest concentrated in one hive. When the honey-harvest commences, or at any time we think best, we can get the brood-chamber and the colony in the most desirable condition for the production of comb honey. By this management we do not need to watch for swarms, because we get none. The colonies are as near self-acting as possible; and for these reasons the method is the solution of the problem for out-apiaries. If you ask me for disadvantages, I do not know any.

Converse, Tex.

THE USE OF CARBOLIC ACID DURING SPRAYING TIME.

Shallow vs. Extra-shallow Brood-chambers; Pollen in Sections.

BY JOHN S. CALLBREATH.

Mr. Root:—You said some time ago in GLEANINGS that even when fruit-trees were not sprayed while in bloom, yet many bees were poisoned from sucking up the moisture with the poison in it. In your last number you say that if carbolic acid is mixed with sugar syrup the bees simply won't touch it. Now, why not mix carbolic acid in the Bordeaux mixture, or whatever is used in spraying trees, and prevent any loss from that source? If it would be effective, and wouldn't harm the trees, bee-keepers could use it themselves, and furnish it free for their neighbors to use.

HOW TO USE THE BEST OF THE SWARM QUEENS, AND YET NOT BREED UP A STRAIN OF SWARMERS.

It can be answered in a few words. Each year select a number of hives with pure queens, purely mated, that have made a lot of honey and capped it white, and that have not swarmed. The next year raise an immense lot of drones from these hives, and limit or entirely prevent drone production in all others. In a very few years there will be a noticeable decrease in swarming—at least that is my experience.

A ten-frame Langstroth hive with frames 7½ in. deep—outside measure—top bars ⅝, and bottom bars ¼ in. thick, has almost exactly the same comb surface as an eight-frame Langstroth. Wouldn't two such ten-frame hives, used as a brood chamber, in raising extracted honey, be much better than two eight-frame hives, same capacity, used the same way? Would they furnish too much room? Could additional ten-frame hives—same size of frame—be used to advantage as extracting-supers? or would the shallower extracting-supers be better?

Some years ago I made some shallow hives ($4\frac{13}{16}$), intending to use them singly to hive swarms in, and then later to use them double. I didn't have any trouble about swarms staying in the one case; but the amount of bee-bread stored in the sections condemned that plan once for all. Using two cases (16 frames) I have had no trouble from bee-bread in the sections, but they were quite sure to be lacking in stores for winter. Then I tried using three of them for a brood-chamber. Also, I used one set of full-depth frames and a shallow case *under*. In *results* I have noticed no difference in these two ways. They always have enough honey for winter. They seem to winter better than the others; they are much less likely to swarm, while they average just as much in surplus; but they don't commence work in sections as soon as bees in the smaller hives, and a larger percentage of their sections is likely to be still unfinished when the bees begin work on chestnut, which means, of course, that it will be yellowed up. I think if I could be here in the spring—as for years I have been unable to be—I could overcome this objection (slowness to enter sections) by stimulating brood-rearing. If so, then a 1½-story hive (using the eight-frame Dovetailed hive as a unit) would be better for comb honey than a single story; and if, as I suppose is admitted, a brood-chamber of an extracting-hive should be larger than for a comb-honey hive, then why wouldn't a double-story ten-frame hive (frames 7½ in. deep) be just the thing in running for extracted honey?

Many thanks to Mr. Green for his *driving* and *straining* methods of finding a queen that doesn't want to be found.

Rock Rift, N. Y., Oct. 8.

[I am strongly of the opinion that you have hit on a good idea. There seems to be nothing that is so repulsive to bees in the way of a chemical as carbolic acid. If a very little of it is mixed with spraying-fluids it will keep the bees away from the trees I should suppose, even when they are in bloom. But to be on the safe side I would recommend spraying even then *after* the petals have fallen. If syrup having a little carbolic acid in will go untouched in a hive, I see no reason why the bees would not keep away from the trees under any and all circumstances.

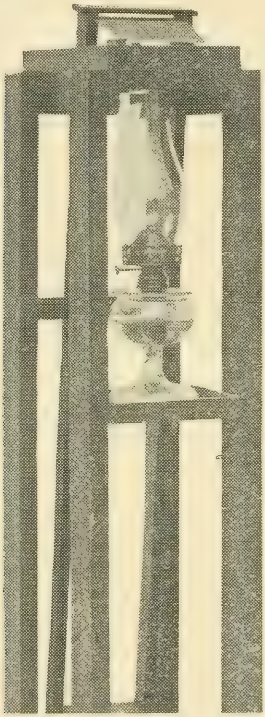
Your scheme of getting a better stock in the apiary is all right; but I am afraid there are but very few honey-producers who give this any intelligent thought or attention.

If a shallow brood-chamber is to be used, one 7 or 7½ inches deep is better than one 4 or 5 inches deep, on account of the pollen going into the sections; but even Dr. Miller, if I remember correctly, says he had some trouble from pollen going into the sections over the seven-inch brood-chamber, while he had no pollen in sections over full-depth Langstroth brood-chambers. But this does not seem to be the experience of many others. Under some conditions, and with some bee-keepers, I believe the seven-inch brood-chambers offer advantages over one nine or ten inches; and it may be true that a shallower brood-chamber would be better under all conditions and with all bee-keepers. I do not know. But I do know this: There is quite a following, and an increasing following, that is working toward a seven-inch brood-chamber.—ED.]

HISTORY OF THE HOT-PLATE FOUNDATION-FASTENER.

BY ARTHUR C. MILLER.

The idea of fastening comb foundation in sections by means of a heated piece of metal was not original with me; and if my memory serves me rightly it was tried and mentioned by several writers prior to 1887. In that year I tried the plan by making the machine illustrated here; but it was an accident, coupled with my desire to know the "reason why," that led me to the discovery of the principle which makes the hot-plate method successful. This iron plate was rough on the front edge, and pushed the section from its place. I bent the plate so it would not touch the section, and then it failed to work either well or uniformly. Bent down so that it rubbed against the section for a short distance, it worked; bent up, it would not—but why? The secret was in the plate so heating that part of the section against which the melted edge of the foundation came, that the latter had a chance to incorporate itself with the fiber of the wood before the wax chilled.



THE ORIGINAL HOT-PLATE FOUNDATION-FASTENER, AS MADE AND USED BY ARTHUR C. MILLER, PROVIDENCE, R. I.

Providence, R. I., Oct. 17.

[I had always supposed that our friend Arthur C. Miller was the originator of the hot-plate method of fastening foundation in sections, but he modestly disclaims the honor. It was L. C. Root, author of "Quinby's New Bee-keeping," who, having visited Mr. Miller, gave the idea first to the public some ten years ago; but after having fully tried it I became convinced that the hot plate sliding in a groove would, by reason of wax accumulations, stick in said groove, thus destroying its usefulness. Indeed, it did stick a good many times, and caused us no little trouble; but the work, when done, was so greatly superior to that performed by any other method then in vogue that I became thoroughly satisfied the *principle* was right, and that it needed only a modification to make it practical. I fussed with a good many styles of machines, and finally gave to our Mr. Warner a plan that was later developed into what we now call the Daisy foundation-fastener. By comparing the general plan of this with the original machine shown above (which was first used by Mr. Miller), one will see they are quite similar. It would seem, then, that Mr. Miller's original foundation-fastener was much more perfect than his later improved device. —ED.]

CONVERSATIONS
DOOLITTLE

MARKETING HONEY.

A knock on the door, and upon opening it I find a man from the city of Auburn, who announces his name, takes a chair, and informs me that his principal errand is to talk over the matter of marketing honey. We have an hour's conversation after about this style, as nearly as I can remember:

"I have produced more comb honey this year than our family can consume, and I wish to know how best to market it."

"The marketing of honey is an important question, for a person may succeed in producing a good article of honey, and so put it up and force it upon the market, that it will not bring the producer as much as a third or fourth class article would an apiarist who has an eye to this important item, 'marketing honey.'"

"It doesn't seem possible that such can be the case."

"I know it seems hardly possible; but, as I hinted, a good price for honey depends much upon the state in which it reaches the market."

"Undoubtedly honey would be broken by rough handling; but I can put mine in a wagon, and deliver it in perfect order at our grocer's."

"No doubt *you* could do so, for many will take their honey to market in bulk, piling the sections into a spring wagon in a haphazard way, and, driving to the nearest town or city, offer it to the first grocer they come to."

"Well, is not this the proper thing to do?"

"Hardly; for, as the grocer looks at it, he is quite liable to soliloquize thus: 'This honey is in poor shape for me to sell; and if I put it in attractive shape by crating it, it will cost me a cent a pound at least; also, this honey shows that the producer does not know the value of his production, or he would have put it up in marketable shape; therefore, if I buy it, it will be at a less figure than I otherwise would pay.' So he offers three or four cents less than he would expect to pay for the same quality of honey nicely crated and offered for sale by a person knowing what such honey was worth in the different markets."

"Upon what do you base such thoughts as these?"

"While passing through the city of Syracuse some years ago I stepped into several places where I saw honey, and inquired the price they paid for it. The grocer informed me, pointing to a lot of perhaps 200 pounds not crated, that he paid 8 cents a pound for that; and then, turning to a lot which was no better, but nicely put up in handsome crates, he said, 'That lot cost me 12 cents a pound;' and upon questioning him I found he was retailing both lots at 16 cents a pound."

"Did you find any other places like this?"

"Yes; and this was about the difference in price which I found generally, although in one or two places it was not more than two cents."

"Well, at that rate I should think it would pay me better to crate mine."

"Yes, it pays largely to crate our product; and if I had but 25 pounds of honey to take to market, I would crate it by all means, not only because it would pay me, but also because it would help to establish a more uniform price for honey throughout the country."

"I conclude that I know very little about this matter of marketing honey, so will venture to ask what I had better do with my honey after I have it nicely crated."

"In answering this question I would say that much depends upon the amount of honey we have and upon our surroundings. If we have few bees, and produce only a small quantity, it will probably be better to sell it in our own city, or the small towns about us, but not till we know what it is worth to us if we send it to some of the large cities."

"How can we tell what it is worth to us in the larger cities?"

"To do this we should take some paper which will give correct market reports on honey of the different grades. Having this we should next figure the expense of freight and commission out, taking the grade ours would come under as the basis for this, when we shall have what our honey is worth delivered at our nearest railroad station; and, by figuring out the cost of hauling, what it is worth at our door."

"Give me an example of how you would figure."

"Very well. For an example, the freight rate from Skaneateles to New York city is 45 cents per 100 pounds. As this is gross weight, we deduct the weight of the crate, by which we find that it costs us about 50 cents for every 100 pounds of honey, or half a cent a pound. Then we have to pay 25 cents per 100 for hauling and loading on car, which makes one-fourth of a cent more. Upon looking up quotations we find that good honey, such as we have, sells at from 14 to 16 cents in that city. Suppose we call it 15 cents. As most commission men charge ten per cent commission for selling, we have 1½ cents more for commission, or 2¼ cents as all of the expense of getting our honey from our door to New York and having it sold. Thus you will see that, if we can not get 12¾ cents for our honey at our door, we had better send it to New York. And you can figure the same way for Auburn or any other place."

"That seems plain, and I begin to see now how I can know just what my product is worth to me without being entirely governed by what my grocer offers."

"That is right; and if every one having honey to sell would adopt the same line of reasoning, crate it nicely, and then hold on to his product till he could get what it was really worth, we should soon find our smaller towns and cities paying a uniform price, and the country taking a long stride toward making honey as staple an article of merchandise as it can ever become."

"I am really glad I came over to see you, for I now see where I can be more independent than I have formerly been, having the matter of fixing prices quite largely in my own hands. But I must be going if I reach home before it gets dark. Good day."

"Good afternoon."

HEADS OF GRAIN FROM DIFFERENT FIELDS

HYBRID STOCK REVERTING TO BLACK; BREEDING FOR THE YELLOW.

Last spring I had a colony of black bees. They swarmed, and in the natural order of things the new queen became fertilized and commenced laying. Her progeny proved to be a mixture, about two-thirds being pure blacks and one-third pure Italians; that is, they clearly showed the three yellow bands. If this colony should swarm again next spring, and should the queen which will eventually reign be produced from an egg such as brought forth the three-banded bees, will this queen be to all appearances an Italian? Should she mate with a pure Italian drone, will her progeny be pure Italians? To make my meaning more clear, I desire to know whether, if matters should turn out as stated above, my colony would change from pure blacks to pure Italians in two generations, without any outside assistance. J. F. HENNESSY.

Ballston Spa, N. Y., Oct. 5.

[Hybrid bees have a tendency, if any thing, to revert to the original black rather than to the Italian stock. Why this is so I can not say. The bees from the second queen reared under the conditions named above, while they might be better Italians (that is, more of them three-banded), yet the queen *might* be just as much a hybrid as if she had been reared from an egg that would have produced a bee black in color. While she herself might be lighter in color, her bees *might* run to the other extreme, or dark hybrids. However, if one were attempting to rear yellow stock he could gradually work toward the yellow in his bees by breeding entirely from the yellow in them; but the probabilities are that two generations would not begin to give entirely yellow stock. The bees of the average hybrid queen range all the way from almost black to entirely yellow bees; that is to say, there will be specimens of what appear to be really black, specimens of one and two banded bees, and also specimens of three-banded; but the last named are not pure Italians by considerable. If it were possible for one of these three-banded bees to be transformed into a queen, her bees might sport all the way from black to three-banders, just the same as those of her mother; but in all probability the yellow would be more predominant in the second lot of bees.—Ed.]

WHITE AND RED CLOVERS AS HONEY-PLANTS.

Query: *Does red clover always contain honey?* White clover does not.

In measuring the tongues of bees and the corollas of red clover, what is the approximate difference in length and depth?

Baptisttown, N. J. W. W. Case.

[Red clover does not always contain honey, neither does white clover; but the red will yield nectar more frequently than the white. I have never failed to find drops of nectar in the corolla-tubes of red clover during the latter part of summer; but those same tubes will be perfectly dry during the months of September and October, in our locality; and they may also be dry during some seasons in August, but I have never seen the time yet.

The approximate length of the tongues of average bees—that is, the reach—is $\frac{16}{100}$. The greatest length so far measured is $\frac{23}{100}$. Red-clover corolla-tubes vary in length all the way from ⅛ to ⅜; and an average of them is about ¼ of an inch, or $\frac{25}{100}$, deep. The bees of red clover queens have tongues anywhere from $\frac{18}{100}$ to $\frac{23}{100}$ long; and we are now striving to get a strain that will have $\frac{25}{100}$ length.—Ed.]

ANOTHER RECORD BREAKING QUEEN WHOSE BEES HAVE LONG TONGUES.

I send you a sample of bees from a colony of mine which has made a remarkable record, with the object of having their tongues measured. This colony has put up 240 lbs. of surplus honey this season in an apiary averaging 85 lbs. During a conversation with J. M. Rankin, at the Chicago convention, I mentioned the record of this colony, and he suggested that I send him a sample of bees. I did so, with the result that, of 10 bees sent, 5 had tongues measuring 6 mm. each, or .236 inches long. If this is correct, and in your measurements you obtain the same results, or nearly so, it is evident that the .25-inch length of tongue necessary for red clover is nearly reached, and in all probability can be attained in a year or two by careful breeding.

While we are on the subject, I should like to know if you could furnish the necessary implements for this kind of measuring; and if so, about what the cost would be. I could get the microscope, and possibly every thing but the rule; and this I am at a loss to know what to inquire for.

The past season has furnished such a remarkable object-lesson of the possibilities of bee culture, that I do not feel as if I could afford to be without some means of accurate measurement another season; and with something definite and decisive to go ahead with, instead of guesswork, it would seem as if progress should be much more rapid than heretofore. J. H. Gerbracht.

Spring Grove, Ill., Oct. 22.

[We measured the tongues of the bees you sent; and according to our way of measuring we get $\frac{20}{100}$. But this does not at all signify that Mr. Rankin's measurement was wrong, even if ours was right. Mr. R. measures the total length of the tongue after it has been dissected from the bee. We measure only so much of the tongue as will extend beyond the mouth parts of the bee, or that length which would be available in getting honey out of deep corolla-tubes. Mr. Rankin's method might be defective from the fact that some bees might not be able to protrude their tongues as far as some other bees having shorter tongues. I say *might*, because I do not know. But it occurred to me that the correct way of measuring was to measure only that portion that the bee could stick out from its mouth.—Ed.]

DEVELOPING NEW VARIETIES IN CATTLE AND IN CLOVER.

Mr. Root:—I have read Hasty, page 681, in regard to clover, etc. You ask about the breeding of stock. I will say that I have been raising high-grade Durhams, both red and roan, some with sire of one color and then the other; and I had 24 cows, some red, some roan, and some spotted, all with horns. Then I got a red-polled sire, imported from England, a dark-red muley (not a muley Durham or Galliway). The result was 22 calves — 20 smooth muleys, one with horns, one with buttons (small horns three to five inches long, grown to the hide only, and loose from the skull), nearly all a solid red. The next cross was a grade of a red poll with these calves, heifers all muley, and red. The thoroughness of the sire has much to do with his calves — that is, the same type for many generations back, and not letting any sports in this chain of breeding.

Friend Hasty does not say that he kept out these sports by breeding white heads only. Perhaps some white heads were fertilized from red heads. If he had kept the white heads all under a screen, so no other heads could have discharged their pollen on the white, or been carried there by bees or other insects, perhaps his success would have been better. I think his 1897 clover seed is all right for several years yet.

When you spoke of breeding short-headed

clover it was too late to try it this year; but this thought struck me: Inclose a plot of clover so that no insect can have access to it, having a wire screen over it so it can get the rain and sun; then set a hive of bees against this inclosure, having one entrance on the inside and one on the outside, and let the bees work on such heads as they can, and these only would produce seeds. The long heads would have no seeds. Then by using clover from the seeds of this raised inside this inclosure, we could obtain the desired result.

Cuba, Ill. M. W. MURPHEY.

[If I understand you in your last paragraph your point is this: If a patch of red clover be screened from all insects except bees, only those corolla-tubes the bottoms of which the bees can reach, thus distributing the pollen, will bear seed; that such seed, coming as it does from the short tubes, would develop a short-tubed clover. But after all, we run against this snag. We will say that I have succeeded in developing the short-tubed clover — that I have a fine field of it. Now, my neighbor, who has the old-fashioned kind, might have a field within a quarter of a mile of mine. My bees would visit both fields, and mix the pollen, with the result that next year my seed would grow a clover reverting back somewhat to the original variety like that of my neighbor's.—ED.]

THE BORDEAUX MIXTURE—WILL IT KILL BEES, ETC.?

Will the Bordeaux mixture if sprayed on plants or vines that are in blossom, and on which they are working, kill bees? What is the value of dwarf Essex rape as bee-pasturage? When does it blossom? Will it stay in the ground during the winter, and grow next year?

The queen I received from you is doing finely; and, if she does all that your advertisement says, she will be a valuable acquisition to my apiary. J. H. GILFILLAN.

East Brook, Pa., Oct. 1.

[I can not answer from personal experience; but I am inclined to think that the Bordeaux mixture, without Paris green, would not be sufficiently poisonous to do any harm to the bees. Can our experiment stations tell us any thing about it? Dwarf Essex rape does not blossom like ordinary rape; and, to tell the truth, I do not know where the seed is grown or how it is managed to get blossoms and seed. Will some of our readers please enlighten us? In the Southern States, where the winters are not too severe, it will stay in the ground all winter, and would doubtless send up seed-stalks in the spring just as turnips do.—A.I.R.]

BEES, BIRDS, AND GRAPES — MORE ABOUT THEM.

Mr. Root:—I see in your issue for Oct. 1 an article on "Bees, Birds, and Grapes," in which you expressed a doubt as to *sparrows* picking grapes. I have no doubt on that point. Two or three years ago one of my neighbors said my bees were eating his grapes. I told him that birds had punctured them first. He then watched closely, and satisfied himself that they had. This season the sparrows commenced to bite my early red variety of grapes, and I spoke to the neighbor about his, and he said they were biting his. This continued for a week or more before I saw any bees around the grapes. The sparrows have destroyed almost all of the Delaware grapes that I had this year. I have nearly a failure in honey this year—not more than 10 or 12 lbs. surplus per colony. J. R. COLVIN.

Olyphant, Pa., Oct. 8.

[It is possible that sparrows do puncture grapes; but I can easily see how one might be deceived. During the past summer I noticed that the sparrows were very thick around our grapes. In watching to see if they actually did the puncturing, I saw that another bird, the Cape May warbler (*Dendroica tigrina*), was doing that kind of work while the sparrows were after the spiders. Unless I had watched very closely I would have laid the blame on the sparrows. I do not say that sparrows do not pick into grapes; but they are insectivorous in their habits, are fond of spiders, and that is why methinks they are seen around grapes so much.—ED.]

BEES AND PEACHES.

Mr. Root:—In reference to your article on bees and peaches, some twelve years ago I had charge of P. L. Viallon's apiary at Bayou Goula, La. The bees were in the middle of his peach-orchard, and I was led to give particular attention to their damaging the fruit, in consequence of a peach-grower's complaints. Careful and continuous watching for days resulted in finding that the damage in the first instance, in every case, was due to a species of curculio (we had early plums in the same orchard). I saw the curculio puncture, and then after the damage to the skin was done, the bees almost immediately put in their work. I am convinced that this will be found to be the correct solution when green and just-ripe peaches are damaged by bees apparently.

Dalkeith, Fla. H. FITZ HART.

[You are right. I doubt if there has ever been a well-authenticated instance where bees did puncture sound fruit. In every case where the bees have been blamed we have found, when we were able to follow the case up, that some other insect, or a bird, had broken the skin, and then the bees had followed in just as if they were the original perpetrators of the mischief.—ED.]

A WAX-PRODUCING COLONY.

What amount of wax could a colony of bees be made to produce yearly by removing combs frequently from a suitably made super, and feeding back to the bees whatever honey the combs might contain? and could bee-keeping for the production of wax alone be made profitable? BEGINNER.

Bandon, Oregon, Sept. 24.

[It is impossible for me to give you even an estimate. If you cut out the combs as fast as the bees build them after extracting the honey, and then feed the honey back, you might be able to get possibly five pounds of wax. Never having had any experience we could give you only a poor guess.—Ed.]

DISGUSTING TERMS.

Mr. Root:—Will you allow me to enter a kind and gentle protest against the practice of using disgusting terms in connection with honey, such as "bug-juice" for honey-dew, and "gob" for beeswax in comb honey, page 797? Let us leave that for other people. They will do enough of it.

Did you ever try just a little honey on baked sweet potatoes? Mix the honey with the mashed potato, and spread a little butter in, and try it. S. T. Pettit.

Aylmer West, Ont., Can.

[Ever since Prof. Cook protested against the word "bug-juice," some seven or eight years ago, I have made an effort to keep it out of our columns. If it has crept in it was through an oversight. As to the word "gob," that term originated with our unusually esthetic friend W. Z. Hutchinson. I should be willing to accept some other term, but I do not know of any other that conveys the same idea so well.—Ed.]

THE PLURALITY OF LAYING WORKERS IN A HIVE.

Dear Sir:—On page 761 Dr. Miller has a "Stray Straw" on laying workers. In July I had a colony of bees become queenless. I noticed that the eggs laid had an unusual appearance, and, not being able to find the queen, I suspected laying workers. In the hive were starters of foundation 8×2 inches, and in one of these were the eggs. With a pin I crushed or removed all the eggs from the comb and replaced it in the hive. In about twenty minutes I examined it and found about half a dozen workers busily depositing eggs. I pinched all I found doing so, and replaced with the same result. In this way any one may assure himself that the majority of the bees become laying workers.

Brentwood, Ont., Oct. 8. M. Johnstone.

BEES' TONGUES, AND HOW THEY SHOULD BE MEASURED.

Referring to your recent experiments on the measurements of bees' tongues, may I call your attention to one phase of the question which seems to me bears quite as important a relation to the subject as the mere length of the tongue? and this is, the shape of the bee's head. I have put under a powerful magnifier a number of different bees of various strains, and find that there is quite a decided difference in the shape of the heads. Some of them are short and quite round, when looked at full in the face; others are longer and more pointed at the jaw. I think this should be taken into consideration when we are trying to develop a strain which will feed on the red clover.

I call your attention to this now that you may, if you so desire, make examinations this fall before the season closes. I am at present engaged in making some careful measurements of heads of different strains, but can give you no figures, because I find my implements are not delicate enough, and I am making some others. Arthur C. Miller.

Providence, R. I., Sept. 28.

[If you will refer to the answer to J. H. Gerbracht, in this issue, p. 844, you will see that we have taken this matter into consideration; that is to say, we do not measure the length of the tongue, but the distance that the tongue will stick out from the mouth of the bee.—Ed.]

BEGINNERS' QUESTION BOX BY E. R. ROOT

C. A. A., Pa.—It is usually not advisable to take combs of stores out of hives at this time of the year. If the colony is a strong one they will need all they have. If they should have at least 25 or 30 lbs. of sealed stores, which would mean 5 or 6 combs of capped honey or syrup, then you could, perhaps, take away the overplus.

E. W. L., Mass.—We can not explain why your bees are carrying out the white young dead bees. It may be that you have pickled brood or black brood in your hive; or it may be the brood has been chilled or at some time overheated; or it is possible, again, that the bees have at some time gathered some poisonous mixture.

J. H. G., Mich.—If the hive has been queenless for a very great length of time, it is often very hard to introduce a laying queen. We would advise giving them queen-cells or a recently hatched virgin. In any case, give them a frame of brood or unsealed larvæ and see whether they build cells. If so, you may rest assured that they are queenless.

P. G. S., Pa.—There would be no difficulty at all about your raising queens under latitude 40, or in the vicinity of Philadelphia. It is difficult, however, to rear queens in August and September anywhere in the United States, and sometimes even experts are foiled in their attempts. Beginners, as a rule, will get better queens during the early summer months when honey is coming in. I would not, as a rule, recommence raising queens in August and September.

J. S., N. Y.—There is no objection to leaving the two extra frames of honey in the brood-nest if you have them; but if the other six combs were well filled with honey, and the bees could be accommodated on the six, I would take out the two combs not needed, even if they were filled with honey, set them aside, and then next spring give them to the colony that might be running short of stores, whether it be the one under consideration or some other one. In any case, when the frame contains brood it should be left in the hive till the brood hatches.

EDITORIAL
BY E. R. ROOT

WE have been having beautiful October weather in Northern Ohio, so far without a frost to speak of.

MR. FRANK RAUCHFUSS, of Denver, Col., who has just imported two Caucasian queens from Germany, sends us a mailing-cage containing a few of their bees. They seem to be smaller than the ordinary black, hybrid, or Italian bees with which we are so familiar. They are quick and nervy in their movements, and quite distinct in their general appearance from the ordinary black bees.

NOW that producers generally over the country have sold out their honey, we are in better position to judge of the honey season. The great bulk of the honey this year was produced in Colorado and Michigan. A considerable amount was produced in Texas and in some parts of Florida. Taking it all in all, I think we are safe in concluding that this has been the poorest year—even more so than last—that we have had for thirty years.

BEE-KEEPERS from various portions of the country are sending in to us almost daily samples of bees which they say are extra honey-gatherers, and the tongues of which they desire us to measure. In nearly every instance we find the reach of tongue is $\frac{19}{100}$, which is much above the average, $\frac{16}{100}$ being the length of reach in ordinary bees. There is no question but there is a very intimate and close connection between long tongues and the big records of honey-gathering.

OF two wintering-repositories, the one that is entirely under ground should have the preference. The one that is described by T. F. Bingham, in our issue for March 1, p. 174, is ideal. The main thing in a bee-cellar is uniformity of temperature during winter. The mercury should not vary much, even when it is very warm outside. If the repository is entirely under ground, instead of being two feet or more out of the ground, as in the case of the ordinary house cellar, the temperature inside will be very much less subject to outside variations. It is usually not practicable to winter indoors in localities where the winter is somewhat open; but indoor wintering will be perfectly practicable if the repository can be so far under ground that the temperature in it will not vary from one month to another more than four or five degrees.

A WRITER in the Heads of Grain department in this issue asks a question which I failed to answer; viz., as to where he can get the necessary implements for measuring bees' tongues. As I have already explained in these columns, we are prepared to furnish steel rules, graduated to hundredths of an inch, that will measure the tongues of bees. The only other articles necessary are a pair of tweezers, a small bottle of chloroform, and a good magnifier. With this outfit one can do his own measuring. The price of steel rules, if they can not be purchased elsewhere, is 35 cts. postpaid.

ONTARIO BEE-KEEPERS' ASSOCIATION.

THE annual convention of the Ontario Bee-keepers' Association of Canada will be held at Niagara Falls on the 4th, 5th, and 6th days of December. I expect to be at this convention with my stereopticon, and on the evening of the 5th I will present many of the views that were given at Chicago at the great National convention. At the close of the stereopticon work there will be a banquet in honor of the presidents and ex-presidents of the Association. I am requested, in behalf of the Association, to extend a very cordial invitation for the bee-keepers of the United States to attend. Next to the great Chicago meeting this will probably be the largest bee convention held this year. All should go who can.

THE PRESENT STATUS OF THE CASE OF UTTER VS. UTTER.

GENERAL MANAGER SECOR is still at work on the case of Utter vs. Utter. The attorneys in the case are Messrs. Baker & Merritt, of Goshen, N. Y., who have been retained to defend the bee-keeper Utter.

In this connection I am pleased to state that the *Rural New-Yorker*, one of the very best, cleanest, and most reliable agricultural papers published in the world, is greatly interested in this case. I have seen a personal letter from the editor of that journal, expressing the hope that bee-keepers would leave no stone unturned in reversing the absurd decision of the justice of the peace before whom the case was originally tried.

I have also been informed that some evidence, very valuable to the bee-keepers, was suppressed by the aforesaid justice. He made much of the testimony of a certain *bee-keeper* who averred that bees could *bore holes through boards*, and would therefore puncture fruit. The fruit-grower, Mr. Utter, testified, as I understand, that bees *stung his trees* and killed them, that they ate up his fruit, etc. Such rank nonsense should be corrected, and I believe it will be by the higher court, where we shall get full justice.

THE GREAT CONVENTION AND THE BRASS BAND.

THE last convention of the National Bee-keepers' Association was probably the greatest in point of attendance and enthusiasm of any meeting ever held in the history of the organization under its different names. The Chicago Bee-keepers' Association, which entertained us so royally, first arranged for a small hall, but finally at the last minute they found it was necessary to secure a hall that would seat comfortably 500 people; and the wisdom of this change was made apparent the first evening. The Chicago Bee keepers' Association not only entertained us handsomely, but paid all bills, and even furnished a big brass band which came into the convention hall and served us with some delightful music during recess times. The great national convention of bee-keepers—the largest conclave that ever met in the Western Hemisphere, will long be remembered. It is doubtful whether there will be another meeting as large until we meet again in that great hotbed of bee-keepers—Chicago. The Association ought to consider this its home, and should go home at least once in five years.

MOORE'S BEES WITH LONG TONGUES; 23-HUNDREDTHS LONG.

In our last issue I spoke of the fact that we had already got bees with tongues $\frac{21}{100}$ long, and that I thought the time was near at hand when we should be able to get a length of $\frac{25}{100}$, or an even ¼ inch. Well, what do you think? J. P. Moore, the queen-breeder at Morgan, Ky., sent us some bees which we measured up before we knew any thing about them. Some of the bees showed a reaching length of $\frac{20}{100}$, and one bee showed an actual reach of $\frac{23}{100}$. I was just about to write back to friend Moore, and congratulate him, and make him a bid on the queen that raised those bees, when a letter came from him, stating that the bees sent came from a select tested we sent of our $200 red-clover mother. I would have tried to buy that queen, but we have about 50 more of that same choice stock.

My notion of the matter is now that we can let the problem of shortening the corolla-tubes of red-clover alone. We shall be able to reach the desired goal by another route—that is, by stretching the tongues of our bees.

Mr. R. G. Calvert, who measured the tongue of a bee that showed a reach of $\frac{23}{100}$, held that bee up to my eyes and remarked, "What do you think of that for a tongue-reach?"

"Why," said I, "that is the longest I have ever seen;" and it looked as if it were over half the length of the bee itself.

There are hundreds of daughters of this red-clover queen among the queen-breeders and honey-producers of the country; and I would suggest that where they *know* they have this stock they all take particular care of it, and and watch its performance next year, especially during red-clover times.

The editor of the *American Bee-keeper* intimates that all this talk about $200 queens is for advertising purposes. I'll be frank to admit that it *does* look that way; and, further, I don't blame any one for taking that view. But if Editor Hill could see what that queen really is he would be as enthusiastic about her as I. My real intention all along has been to stimulate effort in the production of high-class red-clover stock, and that effort seems to be bearing fruit. A large number of bee-keepers and queen-breeders are competing for the prize I offered of $25.00 to the owner of the longest-tongued bees, and now the joke is on us. Friend Moore will win the prize by a queen he *bought of us*. If we can not find another daughter from our own stock that will beat it, and no one else can, Moore will get the prize.

BLACK BROOD UNDER CONTROL IN NEW YORK; THE GOOD WORK OF THE INSPECTORS; THE IMPORTANCE OF FEEDING BETA-NAPTHOL SYRUPS.

It will be remembered that the Commissioner of Agriculture of New York took an active interest in the matter of the suppression of black and foul brood throughout that State, as the disease was raging rather severely in some portions of it. Four inspectors, comprising some of the most energetic and prominent bee-keepers, were sent out, clothed with the authority of the State, not only to treat and destroy colonies having black brood, but to instruct the owners how to handle it, show them the importance of thorough disinfection, and the danger of leaving combs, that were diseased, subject to the visitation of bees from healthy stocks. The inspectors have gone at the matter so thoroughly and energetically, having examined from fifteen to twenty thousand colonies, that I am pleased to announce that black brood is being rapidly brought under control; and that, while it was raging quite badly last year in some sections of New York, it has either been wiped out or else corraled to such an extent that it is not threatening the life of the bee-keeping industry as it once was. The inspectors are endeavoring to cover every portion of the State, and especially are they anxious to get knowledge of all localities where diseased brood of any kind exists. Bee-keepers in New York will, therefore, be conferring a great favor on themselves and on the industry as a whole by giving the desired information to the nearest inspector. This will greatly aid in the suppression of black brood, and at the same time protect localities already healthy.

I now take pleasure in introducing to our readers the four bee-inspectors (see page 839, this issue) who have done such good work. The gentleman on the left is Mr. N. D. West, of Middleburgh, of West cell-protector fame. The next one, at his right, is W. D. Wright, of Altamont, who has written more or less for GLEANINGS, and is not, therefore, unknown to our readers. The next is Mr. M. Stevens, of Pennellville; and the last is Mr. Charles Stewart, of Sammonsville, both of whom are known to the readers of bee-journals also.

At the time the picture was taken they were assembled at the home of Mr. Stevens, on the 13th of last August, and it is their custom to get together occasionally and compare notes.

In our issue for June 1, p. 445, we published a list of the counties assigned to each man, and it appears they have covered their respective territories in a most thorough and admirable manner. Of course, there are some localities that, from lack of time, and from want of knowledge of the conditions, they have not been able to visit; but if I understand correctly they are authorized to follow up their work next season; for the Commissioner of Agriculture of New York is determined that the power and authority of the great Empire State shall be used to stamp out brood diseases of all forms.

Taking it all in all, I believe that the New York law, as now amended, is the very best possible one that could have been enacted. One inspector, even if he had unlimited authority, would be almost powerless to cope with the diseases; but now that there are four energetic and progressive men we shall hope that black and foul brood will be narrowed down to very close limits. But it should be understood that, even if those diseases are stamped out temporarily, there are liable to be the germs of either in honey or combs, that may at any time give rise to the disease again. It is, therefore, wise to take precautionary measures.

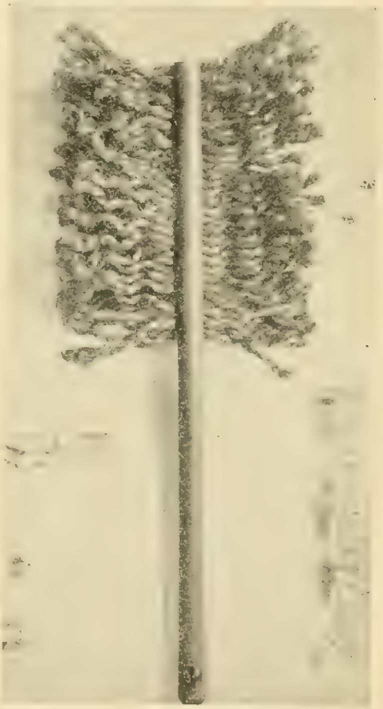
I would advise all bee-keepers in New York to medicate with beta naphthol all syrups they feed to their bees for winter food, as directed in our last issue. While carbolic acid may be used instead, yet in nine cases out of ten the bees will almost refuse to take the syrup; but they offer no objection whatever to food medicated with beta naphthol. As the latter is much safer in every way to handle, and is quite as destructive to the bacilli of either black or foul brood, it should by all means be used.

As we are buying large quantities of honey to sell again, we are constantly running the risk of having some lots broken just as they arrive at our station. If some of the honey should perchance come from these diseased localities it might be the means of conveying the infection, through our own robber bees, to our hives. To provide against any thing of this kind, our bees are wintered almost exclusively on beta-naphthol syrup. Two or three dollars' worth of the drug will medicate enough syrup for between 300 and 400 colonies. It costs so little to use it, and requires so little labor to apply it, that it seems to me that in this day and age of the world one would be foolhardy not to use it, especially if he were located in a place where foul brood and black brood are known to exist. Foul brood is certainly spreading in many sections of the United States, and it is wise to take every precaution.

THE PICKARD BEE-BRUSH AND THE PICKARD FAMILY.

THE Pickards, of Richland Center, Wis., were quite in evidence at the great national convention held in Chicago. Mrs. Pickard started bee keeping by buying up a whole apiary, I believe. Her husband cared nothing for bees—did not care to be bothered with them; but he had no objection to the "women-folks" taking up with the new fad if they wished to. But as time went on, it appears the whole family got into the business, and that too quite heavily by running a series of out-apiaries. But the member of the family who is best known to the bee-keeping world is Miss Ada L. Pickard, who has written a number of articles for the *Bee-keepers' Review* and for some of the other apicultural publications. She and her mother have been unusually successful with bees, taking care of and managing several hundred colonies, while the father, also a bee-keeper (*had to be one*, you know), devotes the greater portion of his time to other business.

Some time ago a subscriber wrote, asking if we had ever seen or tried the Pickard bee-brush. I remembered that such a brush was described and illustrated in the *Bee-keepers' Review*, and on the strong recommendation of our correspondent I wrote to the Pickards for a sample of the brush. One came duly to hand, and is shown herewith in a half-tone that appeared originally in the *Review*.



This brush is by no means a toy affair, but is large and substantial, evidently calculated to clean off the surface of a comb with one sweep. It consists of a handle 15 or 16 inches long, slotted at one end. In this slot, or wide saw-cut, are fastened the strands of an ordinary hemp rope raveled out. These strands are nicely flattened down and evenly distributed. They are then made fast by driving a few nails through the sides or halves. They are next squared off with a pair of shears, when the implement is ready for use. Just how effective this would be in comparison with the Coggshall bee-brush I am not able to say, for I should not consider the use of the brush on only one or two combs a fair test, but I should be glad to hear from our readers who have tried the two brushes. Oh yes! J. M. Jenkins has been selling a brush like this for several years. Whether he got this idea from the Pickards or not, I can not say.

OUR HOMES,

BY A. I. ROOT.

Therefore shall a man leave his father and his mother, and shall cleave unto his wife; and they shall be one flesh.—GEN. 2:24.

Ye are built upon the foundation of the apostles and prophets, Jesus Christ himself being the chief corner stone.—EPH. 2:20.

Thou shalt love thy neighbor as thyself.—LEV. 19:18.

During the past few days I have been having a *series* of "happy surprises;" and as I write there well up in my heart praises to the great Father for those precious and unexpected blessings.

I shall have to go back a little to explain. When Mrs Root and I started out in life together, something like 40 years ago, we had planned having a few years to ourselves before having a family of children to look after; but, as it often happens, "man proposes, but *God* disposes," and it was so in our case. For about 20 years they came into our home, stringing along one by one, tokens of God's love, and the greatest and most precious gifts he ever sent into a home, although we *two* did not all at once see it just that way. Thank God, we see it now. Well, for the first time in almost 40 years, a few weeks ago we found ourselves as we were when we first began housekeeping. The three older ones are married, and have homes of their own, and the other two are at Oberlin at school. For the first time in all these years, not one of the five needed a mother's daily care. What a sad thing it is to reflect that Satan sometimes gets into a home at just about this crisis! Why, I have actually known of several divorces because the parents quarreled *after* they had reared a family of children. How such a thing can happen is more than I can tell; for in our home it was quite the reverse. Our children *all* seemed anxious to have us take a good rest and vacation. The boys, all *four* of them (two sons-in-law, you see), volunteered to take charge of all the business, and let us go where we pleased and stay as long as we pleased; but Mrs. Root said she was too old to enjoy traveling—that it was so long since she had been out among people she would much rather stay at home; and, besides, and most important of all, it used her up so she couldn't stand it to travel on the cars, and she couldn't sleep nights anywhere in the world except in her own home.

I have thus gone into details because I have reason to think there are other good women who are making a similar mistake. She said it was all right for *me* to travel, and begged me to go alone I did so when I took my first trip to "our farm in the woods;" but I begged so hard she reluctantly consented to go with me on the second trip; but when the time came her old "infirmity" (that is what I call it) came back so strong she begged piteously to be again left at home. Of course, I gave way; for in our home, where *one* does not yield, the other *always* does.

Well, unexpectedly still another low-rate excursion was announced for points in Michigan Oct. 17th; and by much urging and exhortation she and I set forth on the above date, and here my story commences. I especially wanted to "stop over" at several points; but low-rate excursions don't allow it. When we reached Grand Rapids, however, I was told that, by a new arrangement, the train stopped there for the night. This was one of my "happy surprises," for it was where I *wanted* to stop. When the agent told me I could take the afternoon train as well as the morning train I was happier still. Well, Mrs. Root slept all right at the hotel; and in the morning, when we found Eugene Davis' greenhouses were a mile and a half from the end of the street-car line, instead of one-fourth of a mile, as I understood when we started, we walked the whole distance with little fatigue.

While friend D. and I were talking "Grand Rapids lettuce" and greenhouses for growing it, she and Mrs. D. got to be like old friends, as I knew they would. Later on, friend D. took his buggy and we visited the great greenhouses of Chas. Chadwick, where one house, devoted entirely to carnations, covers a solid acre. Other houses are devoted to violets, and so on. And then we had a most enjoyable ride over the beautiful city of Grand Rapids, which now has a population close on to 100,000.

The next day at friend Hilbert's Mrs. Root walked over two miles over the hills, without much fatigue; and the third day she and I together walked over to that "farm in the woods," and our rambles before we got home must have made *six or eight* miles; and she not only slept well at night, but had a good sound refreshing sleep in the woods in the open air.

Now, all these details may seem unimportant to many. I give them because I know there are thousands of women, I might say mothers, who have reared families, who would find health, strength, and happiness from just such an outing.

Dear friends, the above has only paved the way for my Home Talk. Let me go back about 42 years, to the time I was a boy of 18. I was then, as now, fond of exploring things new and wonderful. Mrs. Root and I had just become acquainted. Both of us were attending school, and it was important our entire attention and interest should be given to our studies. As you might expect from what you know of me, I soon began to be more "devoted" to her than to my studies, or to any thing else. Fortunately she showed more good sense than I did, and perhaps more than the average schoolgirl of 17 usually does. She at first attempted to reason, and finally declared I must cease my too frequent visits until we both were older, or until she was through with her studies. Her parents, and, in fact, my parents too, were making great sacrifices to keep us in school, and yet *I* would give up education, and all else, for that matter, because, to my poor foolish boyish heart, she seemed to be *the very center of the universe.*

Now, there is no very great wrong right here, only that *Christ Jesus*, and he only, should be the center and "chief corner stone" of every human being's affections.

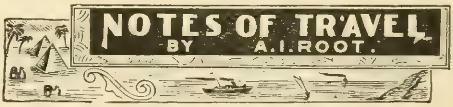
He that loveth father or mother more than me is not worthy of me.—MATT. 10:37.

There can be no abiding love between husband and wife without this. My boyish craze for the girl of my choice was mostly selfishness, although I did not see it so at the time. Mrs. Root, although only 17, stood strong and firm, although it cost her a struggle to do so, especially as I declared I would never come back. But she told me plainly, but kindly, that if I really loved her I would, as time passed, love her all the more for being reasonable. Four years later, when we were both through school, and I had developed a little more good sense, I—we—well, you know if I don't tell it. We commenced life together; but I, at least, had not at that time learned to put Christ Jesus above all and over all. When I was about 30 years of age I gained in judgment and wisdom; but without that "corner stone" I was a good deal like the boy of 18, and it is not so very strange after all that Satan got a chance to whisper in my ear. The older readers of GLEANINGS will remember what I allude to here. We talk about loving our neighbor as ourselves. Dear reader, did it ever occur to you that your own wife, and the mother of your children, is in one sense "your *neighbor*" as well as the man who lives next door? Well, before you can truly love your wife *unselfishly* you must love God. "Thou shalt love the Lord thy God with all thy heart, and with all thy soul, and with all thy strength, and with all thy mind," and *then* you can love your wife as *yourself*, and as God intended you should love her.

And now, dear reader, we are ready to go back to that "farm in the woods." It was a beautiful Indian-summer October morning, and Mrs. Root and I started out together like a couple of children. We were going out for a day in the woods, "*our* woods," and I thought of that time long ago when we were boy and girl of 17 and 18. We went a mile and a half through the fields, and then down an old wagon-road through the thick woods. I thought I loved her when I was 18, but, oh what a different feeling it was now! Perhaps a little incident will explain it. When we had crossed the dividing line near the soft-water spring* we bowed our heads, and I thanked God for his great mercies to us during the years he had permitted us to live together. I thanked him for the dear children at home, and for the beautiful spot of ground we stood on and could call our own, and I asked his blessing on it and all we should do to improve it.

Now, many of you will say it was only a notion of mine; but it really seemed as if, from that moment on, a great flood of joy and peace was spread over me like a mantle. God's loving eye seemed over us while we spent the entire day alone in the woods. I kept thinking of Adam and Eve and the garden God gave them; but while they were after a time afraid of the Father's all-seeing eye, I thanked him again and again that we had nothing to hide from him. I named one of the old wagon-roads "Spring Avenue," the one where we came in; the central one, "Clematis Drive," on account of the festoons of wild clematis overhead; and the road that leads out to the bay, "Bay Road."

During the 40 years and more that have passed I have a thousand times enjoyed having Mrs. Root for a comrade and companion during my rambles; but during all that time I do not remember that we two ever had a pleasanter time together; and let me say in closing, to the dear fathers and mothers who have reared families, that, if the joyous days of your courtship and early married life have not followed all along through, is it not because you have failed to put God first and foremost, *above* all and *over all?* Asking his blessing at the morning meal is not enough. Make it more practical by asking him to bless not only the business of the day but every vacation and every outing or trip that you two may take together, and then it will be natural and easy to ask him to keep his loving eye over you when you take that last *great* outing to regions in that unknown world beyond this life.



NOTES OF TRAVEL

BY A. I. ROOT.

A SEQUEL TO MY PLUM STORIES—SEE PREVIOUS ISSUE.

The following occurred to me after the above had gone into print. After leaving friend Dobson I started back on a different route in order to avoid those hills 700 feet high, with sand sometimes a foot deep clear to the summit. Friend D. told me I could get a very nice road by taking the first turn to the left, and going straight north; and I did find a very pretty wheel-road for about two miles; then I got into the everlasting hills once more, especially when I left the table lands and began dropping down to the level of Carp Lake. At one point where I inquired my way I was told a foot-path through the fields would save me over a mile, and a foot-path is a very much better track than a wagon-road, in a sandy locality.* Well, this foot-path led me down hill on a pretty steep grade; and before I knew it I was at the back door of a farmhouse on the sidehill I concluded there must be a good path around the house, and further on down, so I kept right on without slacking up very much. I got around the house all right, but the path took me down into the garden, and before I knew it I had to dip down my head to get under one of the loveliest plum-trees that was ever seen by mortal man or woman ; and there *was* a man and a *woman* on the scene pretty quick. Let me first explain that the plum-tree was one of the native plums found in the Traverse region. It had, however, been under cultivation, and was loaded almost to breaking with the most beautiful fruit that ever tantalized even Adam and Eve. This last observation I do not give on authority—it is only my own personal opinion. The plums were covered with a beautiful bloom, and there was a shading between scarlet, crimson, and rose color that I never saw equaled on any cultivated fruit. I found that, mounted on my wheel, I could not get under the tree without knocking off the fruit ; so I got off hurriedly, and had just got one plum in my mouth—you see, I wanted to learn whether they tasted as well as they looked, and I could not wait to go up to the house and get permission.

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* This spring gives 300 barrels a day of water, so soft even Mrs. Root said it seemed exactly like rain water.

* Right here comes in the convenience of a light wheel. With a wheel weighing only 20 lbs I can throw it over a barbed wire fence without much trouble, and have it clear the wires; but a wheel that weighs 25 lbs. or more taxes my strength pretty severely. It is often very convenient to make cuts across the country, especially where there is a path, even one made by sheep or cows; and I often have to pick up my wheel and carry it for various reasons. I have found by experience that a wheel weighing 20 lbs. is amply strong for a rider who weighs only 125 to 130 lbs.

At this crisis a woman appeared in the shape of a good-sized German lady who could not speak English, and I could not speak German. I guessed from her gesticulations, however, that she wanted to know what I was doing by flying into their garden in that way, and rushing not only toward, but right *into* her plum-tree. I made her understand that I wanted to get down to the station, which could be seen at the bottom of the hill. She made haste to tell me I had got into the wrong path. I gave a hasty and a reluctant look at that plum-tree, and then fearing I might miss the train, and also that I might be arrested for burglary, I slowly followed her to a part of the dooryard where she pointed out the path that led down to the station. I thanked her, and told her I was sorry to make her so much trouble. At this she managed to smile a little and say that it was not any trouble at all, and disappeared. Just then I discovered that that plum was more exquisitely delicious than any other since the time of Adam and Eve. This, again, is my opinion, you know. I wanted to make some excuse for going back and asking for just a few plums from that heavily laden tree. If the good woman could only have spoken English I might have persuaded her that some of them *ought* to be removed. They were weighing too heavily on the branches, and, besides, they were crowding each other. But I feared the train might come in sight at any moment, and so I got on my wheel and plunged down the hill. When I got home I tried to convince friend Hilbert that there was not another such plum-tree on the face of the earth ; but I could not get his enthusiasm up to a point where he would promise to go and see it ; and every time I have thought of it I have felt badly because I did not get half a dozen or more plums instead of only one when there was such an *awful* lot. When I get up on my new farm I am going to have some grafts from that very tree—see if I don't.

When I reached the station I was disgusted to find I had more than an hour to wait ; so I wheeled over to the steamboat-landing at the head of Carp Lake, and got aboard the boat to rest a little after my tussle with the sand hills ; for, to tell the truth, I was dripping wet clear through my heavy winter underwear and outer cotton shirt. When I began to be chilly, the engine room on the boat was just the nicest place in the world to dry me up and keep me from taking cold. Before I reached the station at Bingham I had taken such a fancy to the boat, to the captain, engineer, and fireman, that I telephoned at the landing to my friends, and kept right on. They told me that about dusk we would pass Fountain Point, where there is an artesian well 900 feet deep, that throws a stream from a six-inch pipe 15 or 20 feet high. Sure enough, we caught a glimpse of the white spray of the fountain when we were fully a mile away. Just a little way beyond the fountain, Carp Lake narrows down between two banks so that a wagon-road bridge is thrown across overhead. After getting through this narrow passage we reached Leland, the county-seat of Leelanaw Co., a little after dark. I told the captain I wanted to take a wheelride over to Fountain Point very early in the morning. As there were no guests at the hotel there at that time of year, they were not in the habit of stopping ; but he very kindly promised to stop for me.

During the night we had a terrific thunderstorm, with torrents of rain. Notwithstanding, that beautiful sandy soil in the Traverse region dries up so quickly that I had a magnificent wheelride next morning around the border of the lake. In due time I crossed the bridge where our steamer passed under the night before, and reached Fountain Point so I had half an hour to view it before the steamer picked me up. This wonderful artesian well was the result of drilling for oil something like thirty years ago. The water has a slightly sulphurous taste, like most artesian wells from great depths. Of course, it is called a medical spring, and the hotel was built as a sort of sanitarium. It will accommodate 100 guests, so I was told. The stream of water would furnish power for lighting the whole establishment by electricity, and perhaps do cooking besides ; but the proprietors have never seen fit to invest in the necessary machinery ; therefore the water has been spouting up without interruption for thirty years past, sending a big stream day and night, summer and winter, out into Carp Lake. Where does it come from? Nobody can tell, but I would suggest that it is the rain water that falls on those sandy hills 700 feet high. It probably is caught in some reservoir of impervious clay, and that 900-foot well *happened* to top the reservoir.

The steamer on the little lake is very accommodating, and it was not only a pleasant but a cheap way to travel. The captain ran his boat up to the wharf at Fountain Point for just one passenger, and that passenger paid him only 20 cents for his passage to the wharf at Bingham. Just think of it—a steamboat ride on a beautiful lake, every day if you wish to go so often, for only 20 cents! The steamer makes daily trips so as to connect with the railway trains.

Perhaps I should explain that Carp Lake, on which the little steamer runs, is about 20 miles long. At its extreme northern point it empties into Lake Michigan; and this is where Leland, the county seat of Leelanaw Co., is located. Now, there are so many springs all around the banks of Carp Lake that there is quite a waterfall pouring over into Lake Michigan; and years ago they found by damming up the outlet they could get a fall of 12 feet. The landlord at the hotel told me there was a water power there equal to 800 horse power, wasting its strength year in and year out. For many years there was a sawmill there, but now it is gone or going to ruin. At another time there was a blast-furnace utilizing this same water power; but just now the whole thing seem to be waiting for somebody to convert all this energy into electric power to be used for running railways, and lighting Leland and the adjoining towns.

HEALTH NOTES

BY A. I. ROOT

A correspondent sends us a letter and a lot of circulars from the Non-medicine Cure Co., Cleveland, Ohio. The heading reads, "Diseases cured without medicine and without cost;" and then follow some wonderful claims in regard to their institution. Here is a sample:

WE GUARANTEE A CURE IN EVERY CASE.

We have never yet made a failure with these treatments, not one of which but what have stood over 1000 tests, and some have stood over 100,000 tests. We have only 29 cures so far on our list but we are constantly adding more slowly. But we never have, and we never shall add one until we are absolutely positive that it is infallible. Nine years ago we had conquered but one disease. We are proud of our progress, and believe that we are justified in being so.

Among the 29 diseases they cure we find catarrh, grip, colds, malaria, sleeplessness, neuralgia, etc. Under each one we read, "Cure guaranteed in every case. Price $1.00 for each disease." I sent at once a dollar for the cure of colds; then I added that if they wanted to send the other ones mentioned above I would remit the dollar just as soon as I received benefit from any or all of the instructions for curing the whole six diseases mentioned. I have never been troubled with sleeplessness; but Mrs. Root is, so I called for that on her account. Now, we can not take space to print all of these remedies, even though each one is on a little slip of paper. Instead of getting a good-sized book, on the cure of the grip for my dollar, I simply got the following:

NON MEDICINE CURE; NO. 5. LA GRIPPE.

Grip seizes upon the weak and upon the strong who have become temporarily weakened by some dissipation. Very late hours will invite a cold; the omission of a single meal, or the abuse of the stomach by eating improper food and thereby destroying the normal appetite, is nearly always followed by a cold. There are numberless temporary causes for a cold, but above all causes is the lack of vitality. The human body when in vigorous health is proof against any contagious disease. Eat regularly of any proper food, take plenty of outdoor exercise, and avoid any exhaustion or dissipation.

TREATMENT.—When once attacked with grip, recourse should be had to red pepper. This destroys the germ life. A dose consists of a small quantity of pure red pepper equal in size to a pea, floated upon a large spoonful of milk, followed by a drink of milk or water; take this about the middle of the meal, two or three times a day. Massage of the head, neck, and chest should follow. The patient should take a hot-water bath, rinse in lukewarm water, wipe dry, and go to bed. Sleep in the afternoon, and early at night. Red pepper, sleep, and the restoration of vitality, are the essentials of a cure

No doubt they are correct in saying that the cause of a cold is a *lack of vitality;* and I think they are also right in saying that to cure a cold you must *restore* vitality. I do not know but this would apply to almost any disease. The main point is, *how* can we get back this lost vitality? Sleep is good, I am sure. About the red pepper that masquerades so prominently in all their circulars, I can not feel so sure.

Their cure for catarrh consists principally in drawing a large amount of air into the lungs, and letting it out in different ways, through one nostril and then the other, etc. When a cold begins to loosen up, I know by experience this is an excellent thing; but it would be very hard to convince me that such external manipulation is going to *cure* catarrh. I once heard a great doctor say that many of the remedies in common use amounted to just about as much as it would to keep pouring water on a hot stovepipe to make it cool while you pay no attention whatever to the roaring fire kept constantly burning in the stove. Of course, we *can* cool the pipe by pouring on water enough; but as soon as you stop the water the pipe gets hot again in a twinkling. Well, these wonderful remedies, so far as I have tested them, where they do any good at all, it seems to me, are about on this plan.

The first remedy, that for sleeplessness, is: "Partake of the juice of from one to five dozen oranges per day."

To get clear of malaria we read, "Never use wines or liquors, and especially American beer. Avoid glucose syrups and glucose candy." I do not know but the above remedy might be worth a dollar *to some people.*

The cure for neuralgia is in taking a great big breath, filling the lungs to their utmost capacity, and then holding it there for a while when walking or taking other exercise. Most of the suggestions are very good. If one were to take the juice of five dozen oranges every day he had better go to Florida and start an orange-grove. Growing the fruit would doubtless help him to sleep nights. Now, granting these remedies are good, and I think some of them are of some value in the way of keeping well, one must have a better foundation than this for restoring lost vitality; and I think the foundation of good health should come about something in this way: If your digestion is impaired by eating too much fruit or other stuff between meals, stop it. If it is impaired by a lack of exercise, get to work at something outdoors or take a vacation. If you are getting toward chronic indigestion, stop eating fruits and every thing sweet. If this does not help you, stop for the time being vegetable food of every sort, and, in short, try the lean-meat diet that has been talked about so much in our pages. Get your digestive apparatus to working nicely, and furnishing good material for your blood, and Nature herself will cure you of almost *every* thing.

DR. DOWIE AND HIS PERSECUTORS.

My opinion has been asked repeatedly in regard to the persecution of Dr. Dowie and his followers at Mansfield, O., and other places. Now, while I think we have had ample evidence that Dowie is not what he claims to be, I would not, under any circumstances, countenance or encourage exhibitions of mob violence such as have been witnessed at Mansfield. Dowie went to Cleveland a short time ago, but people generally let him alone to such an extent that he did not stay very long, and that is the proper thing to do. There is a feature about his work, however, that *should* be taken care of by law, in my opinion. In many instances Dowie and other faith healers have induced people to neglect calling a physician where life might have been saved, without question. As an instance, a woman begged piteously to have her husband send for a physician when she was dying with typhoid fever; but he refused, relying on the faith cure. After her death the man was arrested. In the same way children have been left to die from diseases the average physician would handle safely without difficulty. Of course, if you believe with Dowie that "drugs, doctors, and devils," are all one, you might excuse yourself for not sending for a doctor; but the person who declares there are no honest and conscientious doctors is hardly fit to advise in case of serious sickness.

MORE TROUBLE FOR THE DIVINE HEALERS.

The following was handed me on a slip of newspaper, so I can not give credit:

> The Postoffice Department has seized twelve sacks of mail addressed to Francis Truth, at Boston, who had widely advertised himself as a divine healer, but who was recently arrested for fraudulent practices. This mail will be opened by the authorities, and, so far as possible, the money contained therein will be returned to the senders.

It seems from the above that Francis Truth has got out of jail, and opened up business again. Well, I am glad Uncle Samuel is keeping an eye on him; and this reminds me that Weltmer, of Missouri, after he was forbidden to receive mail, opened up almost immediately under another name. The mayor, and all the business men of the little town of Nevada, joined in to help him as before, because he brought so much money into the town. As soon as I was notified of the new institution, I forwarded the facts to the Postoffice Department at Washington, and received their thanks, with a promise to look into it at once. It really seems as if a large part of our people needed Uncle Samuel as guardian to prevent them from sending their hard-earned money to these ravenous wolves who parade themselves in sheep's clothing.

TESTING THE CANTEEN LAW.

The Chicago *Advance* tells us that a test case is now before the courts; and the parties who are behind the arrest are supplied with sufficient cash to carry the case, if need be, to the Supreme Court of the United States. The *Advance* winds up by saying:

> The judges of the lower courts, and the learned Justices of the Supreme Court, will have to decide whether plain language means what it was intended to mean, or whether it means exactly the opposite.

The above quotation puts it all in a nutshell—*does plain language mean what it was intended to mean, or does it mean exactly the opposite?* I hope the good people of America will never let up until this one point is settled fairly.

BELLEFONTAINE ONCE MORE FREE FROM SALOONS.

For several years Bellefontaine was held up as being one of the largest if not *the* largest prohibition town in Ohio; but the wets massed their forces, caught the temperance people napping, and brought back the saloons I think that for two years, or about that length of time, they held the day; but the record of crime and defiance of law got to be so bad that even many of the wets begged to have the saloons ousted once more; and the Anti-saloon League has just helped them to achieve the victory. The following is from the Anti-saloon League attorney:

> As you have doubtless seen in the papers, Bellefontaine has reinstated her prohibitory ordinance. I have been with them in the fight. We have won the day there in spite of the combined liquor forces, and I think we shall hold it for years to come. A number of new townships have won victories in the last few weeks. W. B. WHEELER.

Perhaps I should mention the fact that Bellefontaine is the county-seat of Logan Co., O., and has a population of about 7000.

JUST ONE COUNTY IN OHIO NOT REPRESENTED IN THE STATE PENITENTIARY.

This one county, and it is the *only* one, mind you, is Geauga. Now, here is a significant fact (yes, a *stunning* fact): There are just two counties in Ohio that have no legal saloons—Geauga and Harrison. If I am correct, Geauga has for years kept out the legal saloons, and has also done pretty well in keeping out the *illegal*. While Harrison has no open saloon, it has been infested for some time with quite a number of speakeasies; but recently, with the assistance of the Anti-saloon League, a number of offenders have been tried, convicted, and several thousand dollars turned into the treasury. Our Ohio Penitentiary, as you may know, is almost all the time overcrowded. There are something like 2200 inmates just now, if I am correct, and there are 88 counties in this State; but Geauga has at present *no* representative in the whole two thousand or more from the rest of the State. May God be praised that we have at least one county with such a record; and may other counties take heart and raise the standard. Medina Co. has now only three little towns where saloons are protected. One of them is a mining town, and this is given as an excuse that you "can't keep beer away from miners"

Just now it seems if any one class of people in our country should *not* have beer it is the mining class.

HIGH PRESSURE
GARDENING
BY
A. I. ROOT.

HIGH-PRESSURE FRUIT-GROWING—MORE ABOUT IT.

It now looks as if Medina Co. and the Traverse region of Michigan, and I do not know but the whole wide world, will have to stand aside and take a lower seat, and let Florida stand at the head. The following newspaper clipping comes from the *Palmetto News*, published at Palmetto, Manatee Co., Fla., issue of Oct. 11. The paper was sent by our old friend S. C. Corwin, who explains that the ten trees occupied only an eighth of an acre.

$940 OFFERED FOR FRUIT ON 10 GRAPEFRUIT-TREES.

Capt. J. A. Howze made the offer to R. F. Willis, who refused to accept it, asking a larger sum.

For the fruit on ten grapefruit-trees Capt. J. A. Howze offered R. F. Willis $940; but the offer was refused, Mr. Willis holding the fruit for a larger sum.

The grapefruit-trees are on the Willis-Preston grove in the Ellenton hammock, only a short distance from Palmetto, and are beauties worth a trip to see. They are large handsome trees, and are covered with fruit from top to bottom.

You see, friends, the $940 was not taken. The owner of the little fruit-orchard wants a bigger price, and it will have to be only a little bigger to make it *one thousand dollars* for the crop of fruit hanging on the trees, and the product of a single season. Will some of the Florida friends tell us more about it? How tall are the trees? how wide do the branches spread? what is the diameter of the trunk? how many years have they been growing? I saw a tree while in Florida, and you may remember I wrote it up, belonging to one of our bee-friends, who received $50 for the crop of fruit that grew on it during a single season. I thought that was wonderful; but the statement above fairly takes away one's breath. An acre of such trees would make a crop worth about $8000.

SWEET CLOVER—ITS VALUE FOR BRINGING UP POOR GROUND AND UNPRODUCTIVE CLAY.

Right adjoining our premises is a bank of earth thrown out of a railroad cut. This soil came out of the cut from a depth of ten or twelve feet. Some years ago I got permission of the railway company to use it by way of experiment. Of course, nothing would grow on it—that is, nothing but sweet clover, which is already along the railroad. We let it grow up and scatter seed until last spring, when I saw there was a dense growth of thick succulent stalks, about two feet high. When we were plowing under the clover in the field adjoining, I directed our folks to turn under the sweet clover, and said we would try it with Carman potatoes. The potatoes came up rank and strong, to my great surprise, and we have just been digging them, and I was surprised again to find some of the handsomest, cleanest potatoes on that hard unproductive clay bank that I ever raised anywhere. There was not a particle of scab, no work of wire worms or grubs; and the crop that we got was at the rate of at least 100 bushels per acre. From this experiment I infer that sweet clover is not only worth as much to turn under as any of the common clovers, but I should say even more.

On another piece of railroad ground that had not been covered, consisting of poor clay land like the piece I have just mentioned, we had a plot of Craigs, all clean and free from scab, that went over 300 bushels to the acre. When every thing else blighted, including Carman No. 3, the Craig stood up bright and green; and when every thing else showed scab more or less, unless it was the Russets, the Craig was clean and nice, and the Craig yields almost if not quite double the Russets. For a table potato in the spring, the Craigs are equal to any thing we advertise. But to be fair I am obliged to state that in many localities the Craig does not seem to please at all. This is one of the queer things about potatoes. I am planning to test all of our best varieties in the Traverse region next season.

LOOK OUT FOR J. A. BRADLEY, OF AUGRES, MICH.

This man has been obtaining queens from different well-known breeders, promising to remit on receipt of same. Mr. W. H. Laws, of Round Rock, Texas, has the credit of having exposed his "little game." By comparing notes it seems that some 12 or 15 queen-breeders have trusted this man Bradley. His plan is either not to reply at all, or claim the queen came dead, or that she was "no good," and therefore that he should not pay any thing. Of course, this could not well happen with queens from so many different breeders. Mr. Bradley has written us his story, and I have told him that, under the circumstances, we should expect him to pay for *every queen ordered.*

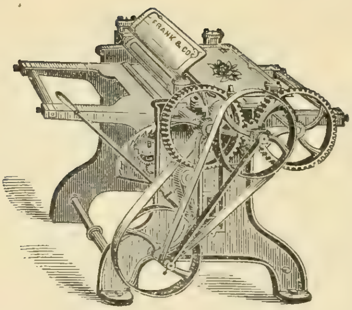
Now, this whole matter reveals two things that are not just as they ought to be. First, this man Bradley has discovered that, by writing plausible letters, he can get queens without giving any reference. Perhaps the breeders had a surplus on hand, and were anxious to sell. Secondly, I am afraid our queen-rearers are a little too ready to trust a man without some evidence in regard to his honesty. Very likely he is a poor man; but that, certainly, is no adequate excuse for robbing queen-breeders. If he is worth any thing we shall see what can be done by law with such a case.

CONVENTION NOTICE.

The Colorado State Bee-keepers' Association convention will be held in Denver, Nov. 21, 22, 23, in conjunction with the horticultural meeting. Place of meeting announced later.

R. C. AIKIN, Pres.,
Loveland, Colo.

F. Rauchfuss, Sec.,
Box 378, Denver.



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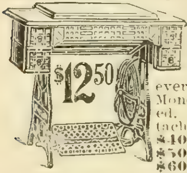

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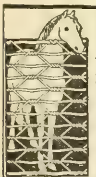

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By buying a poor fence that will let your stock fatten on his crops. The **KITSELMAN FENCE** is a satisfactory one. It insures good sleep and makes good neighbors. Free Catalogue telling how to make 100 Styles at the actual cost of the wire. Write to-day.
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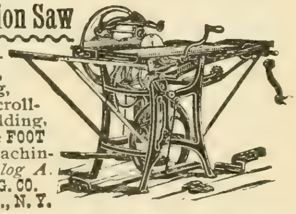
Box 51 Ridgeville, Indiana, U. S. A.



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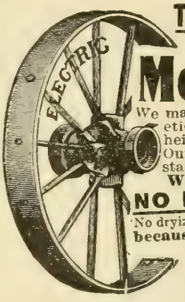
One hundred daughters of that famous honey queen mentioned in my last advertisement. Don't delay, for this may be your last opportunity to obtain one of her daughters at these prices: Warranted queens, 75 cts. each; 6, $4.00; 12, $7.00. Select warranted, $1.00 each; 6, $5.00; 12, $9.00. Safe arrival and satisfaction guaranteed. Circular free. Queens go by return mail unless otherwise directed.

J. P. Moore, Lock box 1, Morgan, Pend. Co., Ky.



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can be secured from the same hens if fed **Green Cut Bone.** It is not only the best egg producing food known, but it also imparts vigor and constitution, which means working force and ability. Makes hens lay longer, no break-down or "laying off."

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is the best machine for preparing all kinds of bone for poultry food. Made in many sizes to suit anybody's needs. **They cut fast, fine, turn easy and don't choke.** **CLOVER CUTTERS** that cut clover fast and easy. Swinging Feed Trays and Mann's Granite Crystal Grit. Send at once for our **FREE** illustrated catalogue.

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Our new free catalogue contains a 12-page egg record, enabling you to keep track of what your hens do. It also describes the

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guaranteed to cut more bone in less time and with less labor than any other cutter made. Your money back if you're not satisfied.

Read our GUARANTEE

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The Power Question

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They are made in both horizontal and upright pattern, with engine attached to boilers. Being very simple and direct in construction they are economic of fuel and **great developers of power. Best for cutting and grinding feed, sawing wood, pumping water, separating cream, churning, &c.** Made of the best materiel throughout they are durable and long lived.

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and a flock of hens means **egg money** the year round. **Green Cut Bone** you know makes hens lay double the eggs winter and summer. This machine runs easier than any other because it is the only ball-bearing bone cutter made. It cuts bone quickly—shears it off in fine shavings. Can't choke; cleans itself; is strong and substantial. Send at once for our **free** illustrated catalogue No. 39

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by using Ley's Poultry Condition Powders. Puts all fowls in a normal condition; destroys all disease germs; purifies the blood; is a tonic and nutriment. Price 25 cts. a pk.; 5 for $1.00. Ley's Thoroughbred Minorca's Eggs, $1.00 for 13. Also Thoroughbred Belgian Hares. **Geo. J. Ley, Florence, Cal.**

DON'T DIG Potatoes by Hand.

It is a slow and expensive way. The cheapest, quickest, and easiest way is to **USE THE IMPROVED**

Dowden Potato-digger.

It gets them all, no matter how deep or shallow. Our book explains how. The book is free. Write for it now.

DOWDEN MFG. CO., Box 23, Prairie City, Iowa.

Sharples Cream Separators—Profitable Dairying.

Two Years for $1.00.

To raise a good crop of honey is one thing—to sell it is another.

To publish a good bee-journal is one thing—to secure a big subscription list is another.

Many bee-keepers pay a great deal of attention to the production of a good crop—and let it sell itself.

In years past I have worked a great deal harder in trying to make a good bee-journal than I have in trying to sell it.

I thought: "If I make a good journal, people will find it out."

They won't. They have to be told of it many times over — seeing several copies is more convincing.

Let me go back a little. I once thought that no inducement should be offered a man to subscribe—he should buy a journal simply and solely for itself.

This plan is dignified; but, as a getter of new subscribers it has no standing with "inducements."

To succeed, a journal must have subscribers. The more subscribers, the better the journal—the better the journal, the more subscribers.

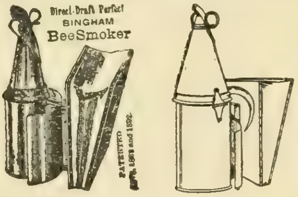
To cut it short, the publisher of a good journal better offer such inducements that a large number of people will subscribe, and thus become acquainted with his journal.

Here is my "inducement:" For $1.00 I will send the Review for all of this year and next. Two years for the price of one.

I have been offering 12 back numbers free, odd numbers, picked up here and there, such as I could spare, but this stock is exhausted. The ones sent out now will be consecutive issues, for two years, beginning with last January.

Send on your dollar, and, as soon as it is received, I will send the back numbers for this year, and then keep on sending the Review from now to the end of next year.

W. Z. Hutchinson, Flint, Mich.



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DEAR SIR:—Inclosed find $1.75. Please send one brass Smoke-engine. I have one already. It is the best smoker I ever used. Truly yours,
HENRY SCHMIDT, Hutto, Texas.

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Heavy tin smoke-engine, 4-inch stove. per mail, $1.50; 3½-inch, $1.10; 3-inch, $1.00; 2½-inch, 90c; 2-inch, 65c. Bingham smokers are the originals, and have all the improvements, and have been the standard of excellence for 22 years. Only three larger ones brass.

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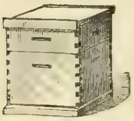

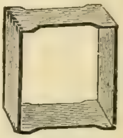

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We make almost every thing used by bee-keepers. Our **Falcon Sections** and new-process foundation are ahead of any. If you will want any supplies for next season get them **now**. Prices will be higher soon. If you haven't our catalog, send for it. A copy free. Also sample copy of the **American Bee-keeper** (now in its 11th yr.).

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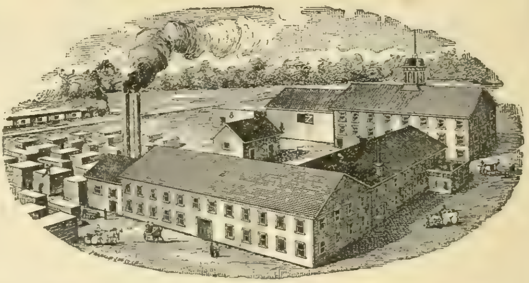

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— IN FACT —

ALL INFERIOR QUEENS!

should be replaced with good young ones. With such queens you will have better success in wintering, and a strong colony for the earliest honey-flow. I am a honey-producer as well as a queen-breeder, and know the value of a good queen in a honey-hive. I have selected for my mothers, queens that I consider perfect in every respect. Their bees are large, gentle, and wonderful honey-gatherers. My drone-mothers are also carefully selected.

Queens Go by Return Mail.

One untested queen, 50c; 12 for $5.50. One tested queen, $1.00; 6 for $5.50; 12 for $8.50. Write for prices on larger numbers.

$10 Reward to the person who sends me the most money for queens between April 1 and November 1, 1900.

W. O. Victor, Wharton, Texas.

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Until you see my 40th annual catalog. A full line of hives and fixtures best adapted to our New England climate. Also best brands of **Comb Foundation and Section-boxes.** I have also made arrangements to keep quite a general stock of

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Parties desiring these goods can get them of me, and **Save Freight Charges.** Bees, Queens, and Nucleus Colonies from the **very best strains** in America. A 40-page illustrated catalog free. Address

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One-pound square, $5.00 a gross; with labels, $5.60 a gross.

Cartons & Shipping-cases

for all sizes of sections. Our cartons are of a superior quality of cardboard, but cost no more than others. Sample free.

Untested Italian queens, 60c. Tested, $1.00. Catalog free.

I. J. Stringham, 105 Park Place, N. Y. Apiaries at Glen Cove, L. I.

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Honey Column.

GRADING RULES.

FANCY. All sections to be well filled, combs straight, firmly attached to all four sides, the combs unsoiled by travel-stain, or otherwise; all the cells sealed except an occasional cell; the outside surface of the wood well scraped of propolis.

A No. 1.—All sections well filled except the row of cells next to the wood; combs straight; one-eighth part of comb surface soiled, or the entire surface slightly soiled; the outside surface of the wood well scraped of propolis.

No. 1.—All sections well filled except the row of cells next to the wood; combs comparatively even; one-eighth part of comb surface soiled; or the entire surface slightly soiled

No. 2.—Three-fourths of the total surface must be filled and sealed.

No. 3.—Must weigh at least half as much as a full weight section.

In addition to this the honey is to be classified according to color, using the terms white amber and dark; that is, there will be "fancy white," "No. 1 dark," etc.

CITY MARKETS.

NEW YORK.—We beg to hand you herewith our market reports for honey. All grades are plentiful just at present. Western honey arriving here has weakened prices. We quote fancy white 1-lb. sections, 15@16; No. 1, 14@15; No. 2, 12@13; mixed, 10@11; buckwheat, 10 Extracted buckwheat, 5½. Beeswax, 27@28.

FRANCIS H. LEGGETT & CO.,
Franklin, West Broadway, and Varick Sts.,
Nov. 7. New York City.

PHILADELPHIA. — Comb honey has seemed very short all the fall. but the ruin of prices is the shippers in California and the West consigning cars to the eastern cities for brokers to sell. Such a car is now due in Philadelphia, and is peddled out in lots of five cases up. We have been able to supply the demand, but as this will demoralize prices we have no quotations to give. Never let a broker sell your honey—he has no interest but commission. Extracted fancy, 8; No. 1, 7; amber, 6. Beeswax, 27. We are producers of honey—do not handle on commission.

WM. A. SELSER,
Nov. 9. 10 Vine St., Philadelphia, Pa.

ALBANY.—Our honey market keeps firm with light stocks and small receipts. We quote fancy white comb, 17@18; No. 1, 16@17; No. 2, 14@15; mixed, 13@15; buckwheat, 13@14; mixed buckwheat, 12@13. Extracted white, 8@9 ; amber, 7@7½ ; buckwheat, 6@6½.

MACDOUGAL & CO.,
Successors to CHAS. MCCULLOCH & CO.,
Nov. 10. Albany, N. Y.

CHICAGO.—There is a demand for fancy white comb honey at 16 cts. that takes all of this grade upon arrival. Other grades are less active, with No. 1 white, 15; amber and travel-stained white, 13@14; dark amber and buckwheat, 10@12. Extracted white, 7½@8; amber, 7@7½; buckwheat and other dark grades, 6½@6¾. Beeswax, 28.

R. A. BURNETT & CO.,
Nov. 8. 163 South Water St., Chicago, Ill.

MILWAUKEE.—This market continues about the same on honey as when reported by us last. The supply is not very large; indeed, we could sell more fancy white, or amber comb honey than is now coming in, and advise shippers to send forward any they may have to dispose of, and can be assured of good values. We quote: Fancy 1-lb. sections. 16½@17; A No. 1, 15@16; No. 1 amber, 15@16. Extracted in barrels, kegs, and pails, white, 9@9½; dark, 7½@8½. Beeswax, 23@27.

A. V. BISHOP & CO.,
Nov. 12. Milwaukee, Wis.

SCHENECTADY.—The demand for comb honey continues good, and we are not receiving enough fancy white to fill our orders; and this serves to stimulate demand for other grades. We quote fancy white, 16@17; No. 1, 15@16; fair to good, 13@14; buckwheat, 11@12. Extracted white, 7@8; dark, 5½@6½.

CHAS MCCULLOCH,
Nov. 8. Schenectady, N. Y.

BOSTON.—Our honey market is very strong at the following prices, with supplies very light: Fancy, 1-lb. cartons, 17; A No. 1, 15@16; No. 1, 15; No. 2, 12@13. Extracted, 7½@8½, according to quality. We can see no reason why these prices should not be well maintained right through the season, and advise shipping.

BLAKE, SCOTT & LEE,
Nov. 9. 31, 33 Commercial St., Boston, Mass.

BUFFALO.—White meets with quick sale. Not very much good stock coming in. Dark sells rather slow. Fancy white comb 17@18; A No. 1, 16@17; No. 1, 15@16; No. 2, 14@15; No. 3, 13@14; fancy dark, 11@12; No. 1 dark, 10@11; No. 2 dark, 9@10; white extracted, 8@9; dark, 5½@6. Beeswax, 28@30.

Nov. 9. W. C. TOWNSEND, Buffalo, N. Y.

DETROIT.—Fancy white comb, 15@16; No. 1, 13@14. Darker grades, 10½@11. Extracted white clover, 8½; light amber, 7½; buckwheat, 6@6½. Beeswax, 26@28.

Nov. 12. M. H. HUNT & SON, Bell Branch, Mich.

FOR SALE.—20 000 lbs. extracted honey from alfalfa, and light amber from Rocky Mountain bee-plant. Two cans, 120 lbs. net. $8 40; also 5 and 10 lb pails. In ordering state if you want white or amber

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" " " " and Cosmopolitan	5 50	3 50
" " " Pearson's, and Cosmopolitan	5 50	3 25
" Success, McClure's, and Cosmopolitan	4 00	2 75
" " Pearson's, and McClure's	4 00	2 75
" " Cosmopolitan, and Pearson's	4 00	2 50
" " and Cosmopolitan	3 00	2 00
" " and Pearson's	3 00	2 00
" " and McClure's	3 00	2 25
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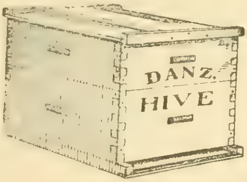

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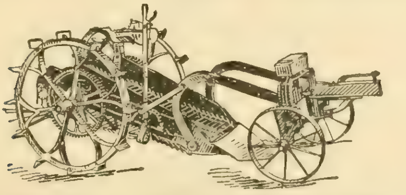

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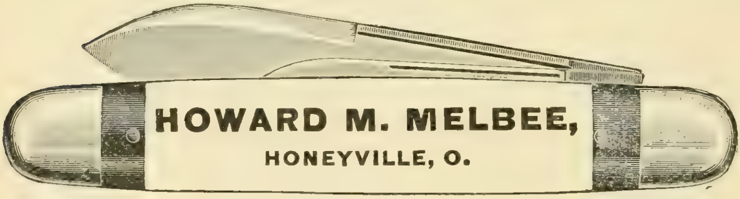

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GLEANINGS IN BEE CULTURE

A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS

ILLUSTRATED SEMI-MONTHLY

Published by THE A. I. ROOT CO.
$1.00 PER YEAR MEDINA, OHIO.

VOL. XXVIII. NOV. 15, 1900. No. 22.

STRAY STRAWS FROM DR C. C. MILLER

THE SUGGESTION is given, p. 835, to take hot honey and lemon juice, but what for? gout or toothache? [Probably for a cold.—STENOG.]

JOHN S. CALLBREATH'S advice, page 841, is excellent as to rearing an abundance of the right kind of drones; but if I understand aright he raises queens from "the best of the swarm queens." Will not the chances for non-swarming be greatly increased if he raises queens from the best of the non-swarmers?

YOU SAY, Mr. Editor, that indoor wintering is practicable if the variation is only four or five degrees. I should say it was practicable if the variation was only ten degrees, providing the average was 45°. [Perhaps you are right; but much better results are secured, I believe, on the five-degree limit of variation. —ED.]

HAVE THE PRINTERS been taking liberties with L. Stachelhausen's manuscript, or do I read crooked? At bottom of page 840 he says: "Some time the next day . . . the lower story of the brood-chamber is removed," and I don't make out from what precedes that more than one story for brood is present, and surely he doesn't mean to leave the bees with nothing but sections. [Perhaps Mr. S. can explain.—ED.]

THOSE FOUR MEN, p. 839, look as if stumped to decide what ails that brood; but from the look of determination on Stevens' face he'll come to some decision before returning the frame to the hive. [If those fellows are ever "stumped" it is not as to what ails the brood, but how to cover all the territory in New York. They are doing good work, and bee-keepers all over the United States ought to pat them, metaphorically, on their backs. —ED.]

YOU SAY, MR. EDITOR, p. 833, it messes up your feeders too much to pour in dry sugar and water, and the only way to avoid this messing-up is to mix the syrup thin in an extractor. We have an easier way, and I suspect our feeders are left cleaner than yours. Just pour in a little more water at the last. [Perhaps you are right; but are you quite sure that the syrup, when finely ripened in the combs, or "inverted," as the chemists say, will be as thoroughly done as if we were to mix the syrup half and half thoroughly beforehand?—ED.]

THAT'S A GOOD ARTICLE of Bro. Doolittle's, p. 842, only there ought to be an addendum. When the crop is so short at Skaneateles that grocers are getting honey from New York, then the figuring ought to be different. To the New York price, 15 cts., must be added ¾ cts. for freight and hauling, making 15¾ cts. that the grocer must pay for the honey that he gets from New York, and he should not expect to buy from the bee-keeper for less. In other words, the Skaneateles bee-keeper should sell in the home market for 3 cts. more when the crop is short than when it is long.

AUSTRALIANS seem agreed that galvanized iron does well to hold honey so long as honey without air touches the surface; but let the surface be simply daubed with honey so the air can get at it, and chemical action at once takes place. [A short time ago the Australians seemed to be agreed that galvanized iron was not fit for either extractors or cans, for holding honey The verdict in this country seems to be that for extractors it is safe, because the honey is supposed to remain in the machine only long enough to run out. But I believe myself that storage-cans of less than one or two barrel capacity should be made of tin. If larger, galvanized iron will be all right.—ED.]

WHITHER are we drifting, when the purist, Stenog, upholds the use of "hive" for "colony" by means of a metonymic prop? It seems to me, Stenog, that you are going a little too far when you assert that "bee-keepers generally speak of colonies of bees either as 'hives' or 'swarms.'" I don't believe "bee-keepers generally" make that mistake one time in five, and I don't believe that any bee-keeper who is at all careful in the use of language ever commits the error except as a slip.

[I certainly did not mean to be understood as defending the use of the word *hive* for *colony*. I simply tried to whitewash a slip in that one case only. Such use of the word *hive* is totally wrong. When I said bee-keepers generally use *hive* or *swarm* for *colony*, I meant in their manuscript, and that we here change the word when we know it should be so modified. Perhaps I should have said they *often*, instead of *generally*, use one word for the other.—STENOG.]

THE AUSTRALASIAN BEE-KEEPER approaches the subject of a bee keeper's right to territory in a somewhat gingerly manner, questioning the moral right to encroach on territory already occupied so long as other territory can be found, inviting discussion "with a view of establishing an etiquette or understanding between bee-keepers and their acknowledged rights to localities." Friend Pender, unless etiquette is stronger in Australia than here it will not keep a new comer from encroaching, and I once got a whole lot of hot shot for saying law ought to back up etiquette. [While etiquette in the matter of priority of rights is sometimes grossly violated, yet in my travels over the country I find that it has a larger sway and influence than you would imagine. There has been so much talk on the subject that all bee-keepers of the better class, I believe, are disinclined to encroach on the territory of their neighbor bee-keepers.- -ED.]

"I AM AFRAID there are very few honey-producers who give this [getting better stock in the apiary] any intelligent thought or attention," quoth ye editor, p. 841. I am afraid you are too nearly right in being thus afraid, Mr. Editor ; but I think more attention is given to it now than ever before ; and if you keep hammering away at it as you have lately been doing, I'm sure a good many of us will get waked up. [The only way to get the general bee-keeping fraternity interested in this subject is to keep hammering. In fact, I have already said so much I am almost afraid now that some of our subscribers will become disgusted. But I shall keep it up, nevertheless, as by so doing I am firmly convinced that our honey crops, especially during a season like the one just past, will be materially increased. When the fraternity begin to realize that there is a market value for good red-clover queens at prices away beyond those that have been hitherto offered for any stock, there will be a stronger effort made toward the production of longer-tongued bees than was ever made before.—ED.]

WHEN CAUGHT without scissors (a rare thing, because I usually have a pair tied to my record-book) I have used a knife as in the first picture, p. 838, only I held the queen feet down. Next time I'll try it as in the picture. [This serves to illustrate the slight variation in the methods used by practical bee-keepers. By comparing those slight variations we each and all of us have the opportunity of selecting the method or combination of methods that is best. The matter of clipping queens' wings seems like an unimportant one, and perhaps it is ; but to say the least it has elicited a great deal of interest. It is difficult to find queens ; and whenever in going through the apiary we happen to discover her majesty, and we find she is not clipped, the thing to do is to seize the opportunity, then and there, whether we have special facilities for the purpose or whether our fingers are nice and clean. To close the hive up and then at some future time, with scissors and other paraphernalia, open up the hive and *hunt* and *hunt* and *hunt* for the queen, wastes in the aggregate hours of time. It should be the practice of all bee-keepers to clip whenever the queen is found, if she is not already cropped. To be able to do it safely and easily with a common jackknife, either sharp or dull, is an important thing to know.—ED.]

EDITOR PENDER argues that 4 lbs. of honey is enough to make a pound of wax. Here's his argument: A 7-pound swarm carries with it 1 lb. of honey; no honey worth mentioning is gathered in the first 24 hours, and in that time 4 oz. of comb is built, or 1 oz. for every 4 oz. of honey. [The old estimate used to be 20 lbs. of honey to one of wax ; but some fifteen or twenty years after these figures were propounded by a celebrated German, Mr. P. L. Viallon, of Bayou Goula, La., at the Bee-keepers' Congress at New Orleans, some fifteen years ago, told of a series of experiments in which he had proved quite conclusively that the 20-lb. figure was altogether too high ; that he could not discover that the bees used more than 7 lbs. of honey to make one of wax. And now it would not be at all surprising, if the experiments were more elaborately conducted, that we should find the 7-lb. limit was still too high. Perhaps the 4-lb. figure is correct. It is certainly true that, if it took 20 lbs. of honey to make a pound of wax, that wax would necessarily have to sell at five or ten times its present figure ; and it would look as if even the 7-lb. limit would make wax much higher than it is now. So from a commercial standpoint I should be inclined to believe that friend Pender is not very far off in his estimate.—ED.]

I FEEL GOOD over the thought that the last colony of my bees has now been got out of the old rotten hives into Dovetails. Some of the frames are still of the old kind, 18x9, but I'll gradually work them out. No one knows the trouble of two kinds of hives so well as the one who has struggled with it for a term of years. [When I visited Dr. Miller once, some three or four years ago, I found that he had got old rags stuffed in the cracks in some of the poorest of his old hives. I could not resist the temptation to take some kodak snap shots. I was chuckling over the fun I would have in showing the pictures of these hives of one of the leading bee-keepers to the readers of GLEANINGS, when Emma, Dr. Miller's sister, put in a most vigorous protest. "Why, how they look !" and would I be so mean as to show up the *worst* feature of Dr. Miller's apiary? That wasn't fair. No, she would never forgive me if I would ever be guilty of such a breach of confidence. Well, I have kept still about it all these years; but now that Dr. Miller has finally disposed of those old hives, and has in their place modern Dovetails, I do not believe I am under obligations to keep the cat in the bag any longer. But if I could find those photos I believe I would have the meanness to show them to our readers. Say, doctor, I congratulate you on the use of all modern bee-hives. May you never, never use rags again to stop leaky hives. N. B.—Tear this leaf out before the women see it.—ED.]

RED-CLOVER TUBES and bees' tongues don't seem so very far apart. We now have tubes .13 deep, and tongues with a reach of .23. Get those measurements *established*, and the red-clover honey crop is ours. Or, figure another way. Clover-tubes now vary from .13 to .38, averaging .25, and we can count on their remaining so. Establish the .23 tongue, and we get all the nectar from tubes .23 or shorter, and that will be 40 per cent of all the red-clover crop, if there is a *regular* variation from .13 to .38. Stretch the tongues .02 more, and half the crop is ours. That's only counting the tubes that will be drained to the bottom. An extra quantity will be got from some of the other tubes. For example, with .25 tongues all the nectar will be got from a .26 tube except .01 of an inch. You're right, Mr. Editor; never mind the tubes but stretch the tongues. [Yes, sir, you are right in your figuring, I believe; but do not assume that we have a full colony of bees whose tongue-reach is .23. J. P. Moore has a queen, some of whose bees will show that extreme measurement; but the majority of them run about .21. But the very fact that the bees of this queen have a tendency to sport gives friend Moore a chance to pick out the sports and breed from those that show the longest tongue-reach. It is true that, when we have reached the limit of .25 (possibly we could go further), we are still a little shy of reaching the depth of th loengest clover-tubes. But there will be some satisfaction in thinking that we can get down into them deeper than we ever did before.—ED.]

PICKINGS

FROM OUR NEIGHBORS' FIELDS.

BY STENOG.

The snow! the snow! y'ho! y'ho!
The birds are all gone save the sparrow and crow;
    The rich greet it cheerily,
    Poor men more drearily,
    Sick folks quite wearily,
That chilly hexagonal snow.

* * *

WESTERN BEE KEEPER.

This is a new comer from Boulder, Col., and is in every respect a readable and able bee-journal, published by the Labor Publishing Co. I hope to see it regularly. On one page I notice an article copied from the Chicago *Chronicle*, in reference to making paraffine wax from petroleum. It is very interesting, and describes the various products that are manufactured from this oil in addition to common kerosene; but I wondered the following paragraph was printed without any protest on the part of the editor:

> The busy little bee was long ago cheated out of his monopoly in the honey-making business by the artificial-honey manufacturers. Now he is left to improve the shining hour as best he may, for his corner on wax is rapidly slipping away from him. Paraffine, a product of crude petroleum, is taking the place of beeswax in commerce very largely, and half the wax candles of to-day are pure paraffine, and never saw the inside of a bee-hive.

While paraffine often can, without a doubt, be made to take the place of beeswax, and answer as good a purpose, especially for religious ceremonies, the first sentence shows plainly that the correspondent did not know what all well-informed people do know—that paraffine can by no means be made to take the place of beeswax in comb, as it melts too easily.

Right here I am pleased to note that the editor has, after all, grappled this matter. He says:

> In these days of prevailing adulteration, when so often things are not what they seem it is a comfort to know that, when one buys comb honey, he may know without question he is getting the genuine article. The silly stories seen from time to time in the papers about artificial combs being filled with glucose, and deftly sealed over with a hot iron, have not the slightest foundation. In fact, for years there has been a standing offer by one whose financial responsibility is unquestioned, of $1000 for a single pound of comb honey made without the intervention of bees. The offer remains untaken, and will probably always remain so, for the highest art of man can never compass such delicate workmanship as the skill of a bee accomplishes.

Will somebody please undertake to get this straightened out in the columns of the *Chronicle?* By the way, daily papers never correct a false assertion. A New York paper recently gave the obituary of a man who immediately replied, trying to prove that he was not dead. No retraction was made, but the editor said he would announce the birth of the man in question, in the proper column, and leave his readers to draw their own inference.

* * *

Grace and sweetness are combined in the following:

> Grace L. Lane and Sadie J. Butman, two ladies who moved from Missouri recently, will establish a honey trade in the vicinity of Loveland. Both were engaged in school-teaching in Missouri, but, it is said, have been preparing themselves for this work for some time.

* * *

Mrs. H. R. Norville, of Denver, expects to establish a large bee and Belgian-hare industry near Loveland this fall. She is negotiating for twenty acres, and will proceed to stock it with bees and young hares.

* * *

In regard to starting in bee-keeping in Colorado, the editor says:

> The bee industry in Colorado is still in its infancy. Still we know of no locality better adapted for bee culture than the eastern slope of the Rockies. With its abundance of wild flowers, and fields of alfalfa, it offers to wide-awake people a good business proposition and a climate equaled by none. There are plenty of locations and openings for many in bee culture in Colorado.

The following will be of interest in the latitude of Toledo:

> "Keep all colonies strong, and do not put off till to-morrow what should be done to-day," is the motto of A. B. Mason, who is one of the most successful bee-growers in this country.

* * *

Here's a good idea:

> The rapid strides made in the science and practice of bee-keeping during the present half-century, and the present great proportions of the industry are largely due to the fraternal feeling and unselfish interest taken in its development by many of its promoters.

* * *

Here is something relative to Colorado as a honey State:

> One apiary in this county, the owner states, includes swarms [colonies?] that have produced over 300 lbs. each up to Aug. 1, of this season, and this apiary is at least 25 miles from the mountains, although it is in a well-watered and fertile region. There are two other apiaries within a mile of this place which have not had one-half the success of the one mentioned.

The editor says further:

> A bee-keeper who has kept bees for years, and visited them only to remove the honey, would be no more of a success in Colorado than where he is now; but the industrious, studious, and scientific bee-man will find this region well fitted to the industry.

The great number of inquiries made relative to Colorado is my reason for saying so much about it here. But all should remember what has been said in these columns about starting new apiaries where others have been long in possession of the pasturage. The "unwritten law" governing in such cases in the "woolly West" should be observed.

WESTERN APIARY.

This journal is the successor of the one just quoted above. It is published monthly by C. H. Gordon, editor and proprietor, Boulder, Col. It has 16 pages, very coarse print, and is well gotten up. One department is devoted to Belgian hares. Excellent pictures of the Frisbee family are given—Mr. R. K. Frisbee and his son, J. C. Frisbee, and the wife of the latter, who is the secretary of the Frisbee Honey Co. The elder Frisbee is over 80 years of age, but rides a wheel to tone down his exuberance of spirits—a rare thing.

BRITISH BEE JOURNAL.

In the museum of the Whitechapel Library, in East London, three observatory hives were put from Oct. 9 to 12. Nearly 2000 children, from 22 elementary schools in East London, came with their teachers in parties numbering from 30 to 50. Each party had a half-hour lesson, and then the children marched past the hive two by two to see the queen, who showed herself most graciously to every party except two. These forgot their disappointment in the pleasure of seeing the bees' tongues sipping syrup by means of the very clever arrangement which is attached to Jas. Lee & Sons' observatory hives. That is not only a good way to teach in general, but a good way in particular to introduce to the children the wonders of the bee-world.

GENERAL CORRESPONDENCE

HIVING SWARMS ON SHALLOW BROOD-CHAMBERS.

The Secret of Keeping Down Increase and Preventing Swarms More Fully Explained.

BY HARRY LATHROP.

Friend Root:—Referring to my article, "Hiving Swarms on Shallow Brood-chambers," page 684, there is one point I forgot to mention. It might appear to some bee-keepers who read the article that it would do no particular good to unite the bees from the shallow brood chamber to the old hive at the left when the end of the honey season has come, as, when a colony of bees is populous enough, it will do no good to give them more bees, and may do harm. But the point is, if the honey season is a good one, and quite long, I take so many young bees from the old hive and run them into the working colony from time to time, that the old hive will not have bees enough at the close of the season; hence, see that the combs in the old hive are well filled with honey; unite the bees, and you have a good strong colony with a young queen to go into winter quarters.

Now, referring to Dr. Miller's Straw on the front page of GLEANINGS for September 15, he asks me to tell *why* I have fewer swarms, and you in a footnote repeat the request with so much emphasis that I am a little inclined to believe you and the doctor are poking fun at me. Nevertheless I will offer my humble explanation. In the first place I will say I have not had any swarms from colonies worked exclusively for extracted honey in years, and I suppose others have had the same experience. Now, a colony of bees working away quietly year after year in an apiary, without once attempting to swarm, sets a good example in the community, at least. I try to keep my comb-honey colonies as busy in the sections as possible, watch them closely, and give storage room as needed, removing the finished supers promptly. The result has been that only about a third of such colonies swarmed out in good honey years. If the season is a poor one, furnishing little or no honey for the surplus apartment, but enough to keep brood-rearing going at a good pace, then is the time my colonies want to swarm, and do swarm. I have had them cast swarms at a time when I knew there was very little honey in the fields for them, and no prospect whatever for any ahead. At such times I just let them go to the woods, and am glad to get rid of them. They would have been only consumers had they remained.

If I should buy an apiary from some farmer who had attended to them as farmers usually do, allowing each colony to swarm two or three times each season, I could not expect the same results for several years; so you see, doctor, it is a matter of education, to a certain extent. I can give you also the opinion of a Wisconsin bee-keeper of far greater experience than myself—Mr. Frank McNay. I had a talk with him this present summer on the same question. He thinks as I do, that bees can be made to lose their desire and tendency to swarm, by proper management. He related how at one time he purchased a good-sized apiary from a farmer, and worked them the same as he did his other yards, but was surprised to find these bees casting swarms right along, while there was none in the other apiaries. In apiaries of bees that he has owned and operated for a number of years he has so little swarming that it is not necessary to keep any one in on the watch.

WISCONSIN FOUL-BROOD INSPECTOR LOOKING FOR FOUL BROOD. SEE EDITORIALS.

Now, Dr. Miller and Ernest, if either of you wish a queen from one of my colonies that has worked right along without swarming for the last ten years I will sell you one for $200. You see, it is just as easy for me to have $200 queens as it is for others; but don't mention that I offered them to you at such a ruinously low price. When people refuse $1000 for a single Belgian hare, even $300 for a good non-swarming queen ought to be considered low.

Browntown, Wis., Sept. 26.

[Referring to the Straw on the first page of Sept. 1 GLEANINGS, I would say that, so far as my connection was concerned, I was not poking fun at you, but actually desired more light, as I think Dr. Miller did also. It is certainly true that, by careful selection, one might accomplish much in getting a lot of bees or colonies that will not swarm very much. Frank McNay, whom I have long known to be one of the most extensive and practical bee-keepers in Wisconsin, would not be sponsor for an idea of this kind unless he *knew* from experience there was something in it.

But here is an article from Mr. A. Norton, right on the same subject, very largely confirming the experience in the line of producing comb honey with shallow brood-chambers, and the possibilities of keeping down swarming.—ED]

PRODUCING COMB HONEY IN SHALLOW BROOD-CHAMBERS IN CALIFORNIA.

BY A. NORTON.

Friend Root:—In your issue for Sept. 1 you call for the experience of any who have tried the method described by Mr. Lathrop in the same issue. About four years ago Mr. T. H. Kloer, of Terre Haute, Ind., had an article in GLEANINGS describing this plan for comb honey. That same season I had an article in the *Pacific Apiculturist* on the method, which I had independently hit upon myself that year. I gave credit to Mr. Kloer in my article for precedence in having his own method printed first, but stated that I had not copied from him in my method. However, I do not think that either of us had been the first to put it into practice. Many writers had told at various times how to dispose of increase and how to get surplus from young swarms. But with such instructions in the abstract, I had been sufficiently original to apply them to a way of my own in the concrete. This method is not merely to get surplus, but in addition to prevent increase beyond what one wants to keep in his apiary. I have liked the way very well. It does not differ essentially from Mr. Lathrop's. I use shallower hives than he does.

My hives for surplus are only half the depth of my regular hives, which are closed-end Langstroth-size 12-frame hives, the frames suspended at the middle something like the Danzenbaker frame, yet different from it. My surplus hives take any kind of shallow frame I may happen to have. Hoffman half-depth frames do me first rate ; and your Hoffman Dovetailed shallow supers would make excellent bodies for this method as I practice it. In some seasons I have no trouble at all about the queen's going up into the sections to lay, even without excluders. In other years, without excluders, the queens have gone in, sometimes quite badly. I have all of my queens clipped. As swarming-time approaches I endeavor to keep track of the condition of colonies. I do not wait for them to swarm if I can help it. When queen-cells are just ready to seal over, the colony being consequently about ready to swarm, having the fever well upon them, and being populous, if honey conditions are equally favorable I shake the bees with their queen into a shallow hive. As the queen will have slacked up in laying by this time if it is just as cells are sealed over, the bees can be taken very liberally from the old colony, leaving but a comparatively small force in the hive. The queen-cells will be so far along that good queens will result therefrom ; and the bees that are left will soon have young larvæ past the need of feeding. I put the shallow hive in the place of the old one, which is removed but a short distance at first, then further, to let young bees go into the shallow hive (if needed there), then gradually nearer some time in the future, with a view to the final reuniting. I have the shallow hive furnished with starters of two-inch depth or more, with two or three empty combs for the queen to begin laying in. I regulate the supers for sections by the conditions of the season, etc.

It is surprising, to one who has not noticed it before, how the few bees in the parent colony, being relieved of nursery cares and the drain of feeding young larvæ, will accumulate honey. They will, in a good season, soon have their combs fat with treasure. The new colony will begin at once in the sections, and will build the shallow brood-combs in time to keep the queen laying, though she will not have all the room she could occupy. In my locality the seasons are not long enough to induce danger of swarms from the shallow hives. After sage bloom is over in Central California, the honey-flow is barely more than will enable bees to make a living. There might, in localities of longer periods of plenty, be danger of swarming from the young colony as the brood became crowded, necessitating hives an inch or two deeper to begin with, or a modified management with the very shallow ones. At the close of the season, or whenever I am ready to reunite them, I kill the queen that is least desired (often the young one, as she was mated with a black drone, while the old one may be one that has cost me money to get); place wire cloth or even porous burlap over the shallow hive, and set the deep hive on top of it. Mr. Kloer recommended setting the shallow hive above the deep one ; but I find that bees will carry their stores upward more readily than downward, besides having less in the shallow hive to move. When they have become somewhat acquainted with each other, and have acquired a common scent, I gradually make open communication between the stories, or sometimes leave the bees to gnaw through the burlap themselves, and the two colonies become one. Minor details I need not take space to mention, such as seeing that queen-cells are not sealed before union takes place successfully. They might be torn down, or might cause trouble. Such things will readily occur to any common-sense bee-keeper. After the shallow hive is removed from under, the dry combs may be saved for future use, may be sold, perhaps, to buyers of empty combs, or, if one is accumulating them every year, they can be sold as wax. Some may like to use the same each year, giving a shallow brood-nest full of empty combs to the young swarms. I have been able to get surplus honey by the plan given above when I could not by any other, and I think the method is a permanent success.

Monterey, Cal., Sept. 11.

[In localities where the honey-flow is short, it looks decidedly as if we might get more honey by contracting the brood-chamber, providing we can also at the same time keep down swarming. Both Mr. Lathrop and Mr. Norton have been successful to a great degree. No matter what the shape of the brood-chamber is, putting bees on mere starters has decidedly a tendency to check swarming, and to force the honey, if it does come in, into the sections with a rush. The scheme of reuniting, either gradually or all at once, by the plan spoken of by Mr. Lathrop or by Mr. Norton, is an important feature of this method of producing comb honey.

Now, it would be folly, it seems to me, to drop the discussion at this point, and I should be glad to hear from a number of our readers who have been working along these lines.—Ed.]

CLOSED-END FRAMES AND HIVES.

The Bingham and Heddon Compared.

BY J. O. SHEARMAN.

There are three forms of closed-end frames familiar to me for years, and now in use in my apiary, either as complete hives or extracting-supers.

1. The Bingham hive complete; 2. The Heddon hive and the Shirley hive, which I use as supers mostly.

The Bingham first. I begin with the frame as being the most essential part of *any* hive. The frame consists of a top-bar 20 inches long, ¾ in. square; end-pieces 6½ in. tall by 1⅜ wide and ½ thick. The end-pieces are nailed to the top-bar so that one corner of the bar comes to the middle of the top of the ends, and the opposite corner is down for the comb or foundation to be attached to. The bees also attach the combs to the ends of the frames as well. The front of the brood-nest is a board or frame 21 in. long and 6½ wide. The entrance is 20 in. long by ⅜ high.

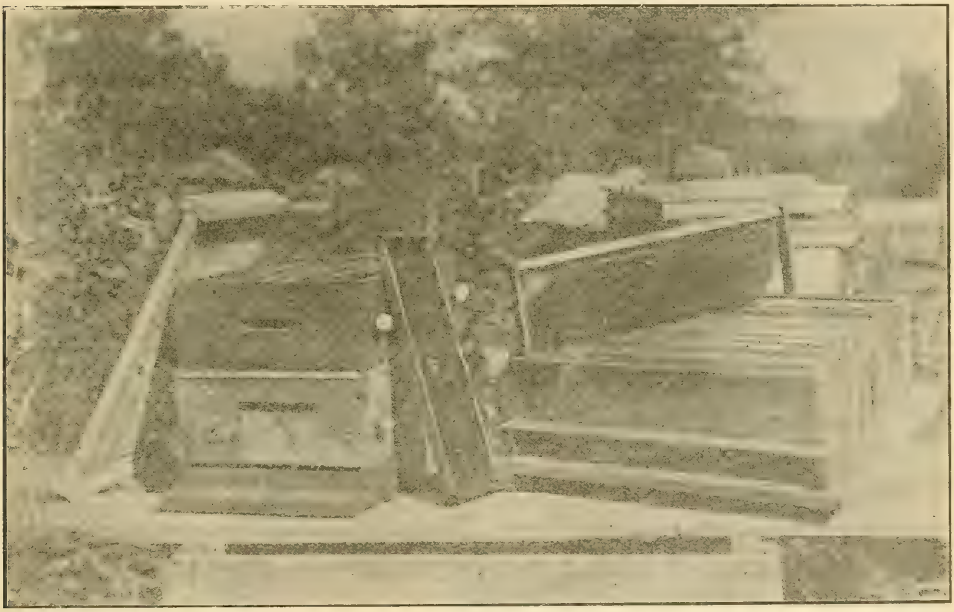


FIG. 1 —HEDDON AND BINGHAM HIVE.

The front and back panels have each a strip ⅛ in. thick nailed up and down each end (inside) so as to keep a full bee-space for outside combs. These parts all *stand* on a level bottom long enough to project ¾ in. beyond the total of the front porch, so as to allow of an outside case over all.

I prefer the cases a little wider, to shed the weather. The front board of this case is 2 in. narrower at the bottom, leaving a porch 2 in. high, sloping to a ⅜-inch doorway.

As can be seen, this hive may be used with 10, 11, or 12 frames in the honey season, by moving the back board back; or take out combs and move the back up close if a smaller brood-chamber is wanted (even to a nucleus).

It can accommodate almost any size of super up to 17 by 20 inches—i. e., inside measure. I use one for sections holding 36 of the 4¼×4¼×2 in. with separators. Sections stand crosswise of the frames. For extracting—well, any old straight combs I have in full sets, on top of queen-excluder of course.

The Heddon hive is different, as shown in cuts 1 and 2, to compare the brood-chambers of each hive. The frame is 18$\frac{1}{16}$ long by 5⅜ deep. Eight of these frames fit in a case which is 5¾ deep, leaving a bee-space over the frames. Two of these cases make a hive, with 8 of these shallow frames in each case, and a bee space through the middle, unless the bees chuck it full of brace-comb, which they often do. The hive stands on a bottom with cleats ⅜ thick along the sides and back, leaving the front open for an entrance. As seen in the cut, this bottom may be reversed for winter, and has 1½-inch cleats on the other side. This hive takes the same size of supers as the L.

New Richmond, Mich., Sept. 19.

[The Bingham hive, a cut and description of which in its more modern form we gave on p. 297 of the current volume, is something like the Quinby closed-end-frame hive. The ends of the frame constitute the ends of the hive. The two open sides are closed up by means of two panels as described. These panels and the frames are squeezed together at each end by means of wire loops in connection with stretcher-sticks. As Mr. Shearman points out, such a hive is very cheaply constructed, and is decidedly on the expansion order, for the brood-nest can be reduced to one, two, or increased to as many frames as the bottom-board will accommodate. Mr. Bingham now uses a bottom-bar to his frame, and his frame is made exactly like the Heddon

The Heddon hive consists of a series of closed-end frames, each set being confined in a shallow rim or super. The frames are held tightly together by means of two thumbscrews passing through one side of the rim near the ends.—ED.]

LARGE V. SMALL HIVES.

A Decision in Favor of the Eight-frame Langstroth, and Why; the Great Resources of a Good Colorado Locality.

BY M. A. GILL.

Mr. Root:—I have bought the home of Mr. J. E. Lyon, in this city, and rented his apiaries for two years, which I will run in connection with my own, which makes me between 700 and 800 colonies for next year. Mr. Lyon's health has failed him, and he has gone to a lower altitude, which we hope, with plenty of rest, will fully restore his former robust health. But many a man besides him would have gone down under the strain of producing 40,000 lbs. of comb honey without any more help than he had this year. We expect to be very busy next year. This includes wife, two daughters, a son, and myself. But we feel equal to the occasion, as we intend to prepare 2000 supers for comb honey this winter, which will enable us to start a little more than even with the bees next season.

A person can manage and care for more bees here run entirely for comb honey, during our long season, than in the East, where the honey season is so short and sweet. I have been trying *hard* for years to like a large hive; but this year has convinced me more than ever that I, at least, can secure more surplus honey with an eight-frame hive than with any thing larger, especially where the season is as long as it is here. The honey-flow with me lasted 91 days, and I find it takes a good queen, even to her utmost, to keep an eight-frame hive well supplied with brood (*as she must*) for that length of time. My best colony for honey filled 12 24-lb. supers; 11 picked colonies in eight-frame hives made 100 24-lb. cases of honey, while all my eight-frame hives averaged 173 lbs. of comb honey.

I do not wish to open the controversy about large vs. small hives, but I candidly believe that, where a person intends to keep a large number of colonies, and where the season is as long as it is here, and where the owner intends to (and does) meet all the demands of the bees both fall and spring, and where there is female help, that, taking into consideration the cost of supplies, and the difference in honey delivered, *there is more real profit with eight-frame hives than any thing larger.*

What you said last winter about this section of Colorado being overstocked is true; but that is not the worst feature in the case, as that insidious foe to bee-keeping, foul brood, has already become a menace to successful bee culture in some sections.

Having had experience with the disease in my own apiaries, as well as in my office as bee-inspector, I shall give it heroic treatment whenever it shows up among my own bees.

Longmont, Colo., Oct. 22.

[J. E. Lyon is one of the most progressive and most successful bee-keepers in Colorado. I met him, both at the convention where he took a conspicuous part, and also at his home.

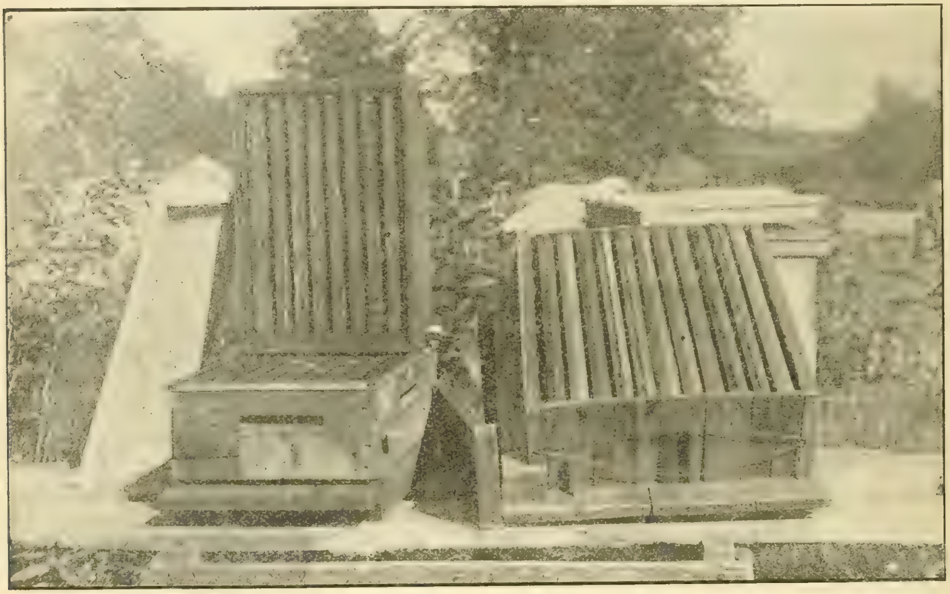


FIG. 2.—HEDDON AND BINGHAM HIVE.

In a social way he is a genial good fellow, and I know that the Colorado Bee-keepers' Association will miss not only a practical man but an enlivening spirit that is always able to keep a convention from getting dull and monotonous

With regard to the eight-frame hive, I noticed that it is used very largely in Colorado, although there was a tendency to use the ten-frame width; but the use of that size was confined almost exclusively to those who made the production of extracted honey a specialty.

There can be no doubt that the eight frame Langstroth hive is well adapted to most localities in the United States. While some other size or style may excel it, yet on the average it meets fairly well the needs of most localities and most bee-keepers. And speaking about the size of hives, I am a little inclined to believe, from testimony that has been offered, that a seven-inch brood-chamber, ten-frame Langstroth width, for the production of comb honey, is a little better, especially if the honey-flows are very short, as they are in many places in the northern part of the United States. It is certainly true that a small hive in any case is better for such localities than a large one, except, perhaps, in some instances where an outyard or two are used, and the bee-keeper can not keep some one to look after swarms. In such cases a large hive often finds favor.—ED.]

FAILURE OF HONEY LAST YEAR.

Wintering in the Cellar; Wintering with a Virgin Queen; Shipping Bees long Distances; Should one Go to Colorado?

BY J. A. HAYNES.

1. To what do you attribute the honey failure in many of the States the past year? Here in South Dakota there has been practically no honey this year, and I am told that Illinois and several other States have but little comparatively. So far as we could tell, the conditions here were perfect, but no honey. Instead we have had to feed for winter. I have fed 320 lbs. of sugar to 36 colonies of my apiary.

2. In wintering in cellar, where the bottom-boards are left on would it not be a good plan to go through now and then with a wire hook, and rake out the dead bees that have fallen in the entrance?

3. I have a colony with a virgin queen. Is it safe to let her remain until spring, and then become fertilized, or requeen?

4. Does W. L. Porter keep his bees in Denver?

5. What success has attended bee culture along the Platte River in Colorado this year?

6. Is it possible to ship bees from South Dakota to Colorado successfully? When is the proper time to do it?

Vermillion, S. D., Nov. 7.

1. No one can give an entirely satisfactory reason. The best one that can be given, however, and it may be the real one, was the general dryness throughout the country along in late spring and early summer, and an insufficient snow and rainfall during the preceding late fall and winter. The result of all this was there was very little white clover grown; and what did sprout up was considerably hampered and held back by the lack of rains just at the *very time* they were needed to cause the flowers to yield honey later. This fall, fortunately, we have had a considerable amount of rain; and if we have plenty of rain next spring and summer, preceded by heavy snows during winter, we shall expect a growth of a large amount of white clover; and white clover is, after all, the main stay for honey throughout the Northern States. When this fails there is a general failure.

2. Yes; but better take off the bottom-boards entirely, if they are the removable kind; if not, cut the entrance so it will be one or two inches deep and the width of the hive. It may be impracticable to do this during winter.

3. I can not answer. We have some virgin queens, or what we suspect to be such, in our hives. They may be fertilized already this fall, or, if not, it is possible they will become fertilized next spring. I would always avoid having a virgin queen in a colony just going into winter quarters, for she is liable to become a drone-layer the following spring, or to be missing just when the colony needs her the most.

4. Mr. Porter lives in Denver, and has a series of out-apiaries anywhere from three to fifteen miles from the city.

5. I could not answer, only that I know the season in Colorado, in a general way, has been very good.

6. Yes, providing you put the bees up properly in a freight-car and go with the car and bees, so that the hives can be put to rights whenever the car is bumped. It is a long tedious trip for the man, and the expense is great. Ordinarily I advise buying bees in one's own locality rather than go to the expense of shipping.

But, say; if you are going to Colorado with the expectation of finding unoccupied territory for keeping bees you may be disappointed. Better go beforehand and look over the field and leave the bees at home; then go back for them if you find conditions favorable. Or, better still, go to Colorado for one season and work bees on shares, or hire out to some bee-keeper, so you can determine for yourself whether the climate, the elevation, and general conditions will be favorable or not. Money would not induce me to live there the year through, on account of the elevation. It seemed as if I was out of breath whenever I attempted to walk any distance; and when I reached an elevation of 9000 feet my pulse at a normal rate of 68 in Ohio jumped up to 130, and kept up that fearful rate all the time I was at that extreme height. This pulse rate was noted when I was sitting still, and had been sitting still for half an hour. There are men who could not stand such an enormous strain on the heart, and you may be one of them.—ED.]

CONVERSATIONS WITH DOOLITTLE

GRADING HONEY.

"Mr. Doolittle, can you tell a beginner something about grading honey? To be sure, I have very little this year, like all the rest in Central New York, but I should like to know how I can put it in the best shape for market."

"Would Mr. Smith like to know how I first put up my honey, and how I was led to grade it as I do at the present time?"

"Yes. Any thing which will shed light on this subject will be very acceptable."

"During the most of the seventies I sold my honey in Syracuse, N. Y., selling every year to the same man at from 25 to 28 cents per pound."

"Whew! Did honey ever bring such prices as those?"

"Yes, and honey did not go below 20 cents till well into the eighties, and we graded the honey then as this man told me to do."

"How was that?"

"He instructed me to put about a like proportion of the different grades of white honey in each crate, and the same with dark, as that was the way he preferred it, he saying, 'This gives me the best results in the end.'"

"And did you follow instructions?"

"Yes. And at that time we used crates holding 100 lbs. and over, so that such grading answered better than it would had the small crates of the present been then used, holding from 20 to 25 pounds."

"What changed you from that way of grading?"

"This man died, and with his death Syracuse became a poor market for honey; so I was obliged to seek a market elsewhere. I tried peddling a little, but soon decided that peddling was not my forte, so began to ship my honey on commission, filling the cases or crates as this Syracuse man had instructed. The parties to whom I consigned the honey soon began to write me, saying that they could obtain more satisfactory prices if I would make at least three grades of my white honey, and the same for my buckwheat, or dark honey."

"Did you take the advice?"

"Yes. The next year I tried the plan with a part, and sent the rest as I had heretofore done The result was, as I have been told, the graded brought me quite an advance over the other not so graded."

"What did it bring you?"

"As I now remember it, No. 1 sold at 22 cents per pound; No. 2 at 20 cents, white No. 3 sold at 16 cents, making an average of a little over 19 cents per pound. That which was not graded differently from my first instructions brought me only a little over 17 cents."

"To what did you attribute the reason for this difference?"

"The reason for this seems to be that two or three sections of poorer honey in a crate has a tendency to catch the eye so that one can scarcely see the good honey at all; while if all are poor they do not expect to purchase for less than ¾ to ⅔ the price of good honey."

"Do you think that covers the whole ground?"

"No. The contrast between good and poor honey, both being in the same crate, is greater than it is when in separate crates unless the two are side by side, so that one can be compared with the other."

"How do you account for this?"

"Human conception, taken in through the eye, is faulty to a certain extent, unless the things to be compared are so arranged that the eye can take such things in as a collection, at one glance. For instance, I have a grade of all No. 1 honey in my honey-house, and all No 2. in my house a few rods distant. A purchaser comes along and stops at the house first. I show him the No. 2 honey. He calls it fine, and thinks it compares favorably with any honey he has seen. I now take him to the honey-house and show him the No. 1, and, nine chances out of ten, he will say that he sees very little difference in the two lots. I now take some No. 2 and No. 1 and put them side by side, and he has no difficulty in deciding that the No. 1 is 'very much the better.'"

"I think that is right!"

"Yes; and taking advantage of this fact, and all of the lessons of the past, I now grade my honey as follows: I pick out three sections of honey, one to represent each grade, and set them up before me as samples to compare with. Every section which comes up to the No. 1 selection is placed in crates as No. 1, the same being marked with XXX in the hand-hole of the crate. To be No. 1, or XXX honey, the comb must be smoothly and evenly capped over throughout its entire surface, with little or no discoloration of the comb near the bottom of the section. The section itself must look new and clean, while no cells of bee-bread or pollen must be seen when looking through the section toward the light."

"It seems to me that is pretty close grading. Can you find many sections like that?"

"Yes. If the honey is taken from the hives soon after it is finished, as it should be, from one-third to two-thirds will grade in this No. 1, according to the season."

"What about No. 2?"

"No. 2 will compare quite favorably with No. 1 except by a side-by-side comparison. In it I put all smoothly sealed sections which are not too badly colored at the bottoms of the combs, together with such sections as show a few cells of pollen (covered with honey) when held up to the light, and those which may have only a few unsealed cells near the bottom of the section. The crates of No. 2 honey are marked with XX in the hand-holes of the same."

"Now tell me about No. 3."

"In No. 3 grade I put all sections which are not less than three-fourths sealed, those that by accident or by brace-combs have their surface marred somewhat; all such as have considerable pollen in them, the same being covered with honey, and sealed over, and all that are badly colored or soiled at the bottom. This No. 3 grade is marked with X in the hand-holes."

"Do these three grades take all of your white honey?"

"No, not all. As a rule, sections which are not at least three-fourths sealed over, and are otherwise too poor to go in these three grades, had better be extracted and the combs kept over till the next year for 'bait' combs."

"Why do you use the X's in preference to the numbers on the cases?"

"Well, I do not know that I have any very good reasons to give for doing this, only that I have been in the habit of doing so, this enabling me at a glance to sort the different grades out when loading or shipping, by simply taking the hand-holes of a pile of crates in at a glance."

"I am very much obliged to you, and I must be going now. Good morning."

HEADS OF GRAIN FROM DIFFERENT FIELDS

LONG TONGUES OR COLOR; ARE THE TWO NECESSARILY ANTAGONISTIC?

Mr. Root:—You, as president of a great bee-keepers' association, I think, do an injustice by so sweepingly condemning *all* golden Italian bees as you did at the convention held in Chicago. You said, "Let us look more to the length of tongue than to color." Do you not think it possible to find length of tongue among the golden strains? Must we now ruthlessly massacre all the beautiful subjects in bee-life without even giving the lovely creatures a chance to run out their pretty tongues for measurement? Has it never occurred to you, Mr. President, that there may be many grades of golden stock (some worthless, I admit—but not all), and that perhaps we might combine length of tongue with beauty, gentleness, etc.? Have you the heart, Mr. President, to pinch a really beautiful young creature whose bees are golden—the brightest of golden—and to the tips, whose workers have no desire to sting, so much engaged are they in bringing sweets to the hive? Could any human being destroy such a queen? Never!

In the past few years I have had considerable experience with golden Italians. I have tested nearly all the different strains, and find not only a great diversity in their traits and markings (color or shade), but also find as wide a difference in their honey-gathering as well as many other qualities—for all the world like any other stock. Therefore, simply because a bee is golden it does not necessarily follow that she is worthless. My dear Mr. President, do not, I beg of you, wrench from us what we have gained along the line of color and markings by putting to death all bees not of a certain stripe (history repeats itself, even unto the bees), but rather encourage careful experiment to improve further, in addition to what we have already gained in color, by giving heed to other qualities. I believe a red-clover golden Italian is possible, and I, for one, shall bend every effort to produce such a bee. Judging from my experiments the past season I shall accomplish that end, for I already have golden bees on red clover. As an aid to this end, allow me to add that advancement in quality has been with me more readily evidenced through the agency of the male than the female. By hand-picked drones from high-grade stock I expect to accomplish wonders another season. SWARTHMORE.

[It seems to me, friend S., that you put more into my language than I really put into it. Take the sentence where you quote me as saying, "Let us look more to length of tongue than to color." There is nothing in that that implies that length of tongue can not be secured in golden Italians. Put the emphasis on the word *more*, and I think you will get my meaning better. But I do say that too much attention has been given to color—so much so that other desirable qualities have been lost to view. This fad for color came very near running out every and all other efforts for the production of bees for business; but, happily, the tide is now turning in favor of bees for honey, irrespective of color. Let us bend our energies toward bees for business, and then if by chance we get the golden yellow with long tongues, and non-swarming qualities, well and good. I do not deny that there may be good workers in yellow stock; but I do say this: That some yellow stock (and we have had it from a good many breeders) has been short-lived, and crosser, than the average leather-colored stock. That has been our experience.—ED.]

WHY A COLONY WILL SOMETIMES PERSIST IN BALLING ITS QUEENS.

I should like you to inform me why it is that a certain colony of bees in my apiary should ball the queen. In the first case they balled her without any apparent reason. As it happened, I saw the ball as it came out, and got the bees off from her. I then caged her in a wire cage I made, and kept her away from them one day, as I had no candy. I then let her in at the entrance toward night. Next day they swarmed out and went off. She was not clipped. The remaining bees reared another queen, a very large hybrid, and a prolific layer. All went well till the other day, when in going around clipping queens I came to her and had a job to find her. After opening the hive twice I found her and clipped her; but I had not got her off my fingers before the bees flew at her and balled her. I let her remain for about two minutes before I got her clear, and put her in the cage, on top of the brood-frames. This morning she was alive, and the bees around the cage seemed quiet. I then made a plug with a hole in it, and filled it with candy and put her in the center of the brood-nest. Do you think they will accept her? I forgot to mention that, at the time I clipped her, I missed the long wing and cut only the short one. Do you think that had any thing to do with the bees balling her? The whole hive seemed mad. They were fighting like good fellows. To-day they are all quiet. H. H. SMYTH.

Kailua N. Kona, Hawaii, Oct. 19.

[It is quite difficult to explain why a colony will sometimes persist in balling its queen. I have tussled with just such bees a good many times, and I sometimes feel like brimstoning them on the spot rather than fuss with them any longer. Those same bees will often refuse to accept an introduced queen, and then after they have accepted her (or after they have raised one for themselves) will pounce on and ball her the minute the hive is opened. They seem to be possessed of the spirit of the evil one itself.

I can explain it only in this way: Opening the hive of course causes a disturbance, and the bees do not know whom to blame but the queen, like the man who when his equilibrium has been disturbed, comes home and "jaws" his wife for something for which she is not to blame; or kicks the dog or cat on sight. I have known several colonies that would ball their queens just as soon as the hive was opened. In some cases I closed the hive and let the queen fight it out if she could. A week or so afterward, on going to the hive I found her in a little knot of bees, just as if she had been balled all that time.

Clipping a queen necessarily brings her in contact with a human being. She acquires a new odor, besides the mutilation, and this has a tendency to cause the bees to attack her when they would not molest her otherwise. In any case, when a colony balls its own queen I would close the hive immediately, and give it a smudge of tobacco smoke; but be careful not to overdo the matter. When the bees have sufficiently recovered make the necessary examination, and then do not open the hive more than is absolutely necessary.

Now, then, referring specifically to your question, you did right, perhaps, in caging the queen and then making provision for her release automatically by the bees; but if you had used the tobacco smoke as I have directed I think it would have saved you some work and quieted the bees down. Yes, I think the colony would accept the queen, but I think I would give them a smudge of tobacco smoke at the time of caging, and perhaps another smudging a few hours before the expected release of the queen.—ED.]

HONEY FOR OATMEAL AND OTHER BREAKFAST GRAIN FOODS.

Mr. Root: — While at breakfast this morning it occurred to me that the bee-keepers of this country could do a good thing for the fraternity, not as bee-keepers but as individuals, by calling the attention of the manufacturers of cereal products such as rolled oats, wheat foods, grape nuts, and the like, to the fact that these preparations can be eaten sweetened with honey instead of sugar, and taste better than sweetened with sugar, and requesting these manufacturers to state this as a fact on their directions that appear on the packages of these materials.

Hundreds and possibly thousands of bee-keepers are using some of these preparations; and these requests, coming from a number of parties, might induce the manufacturers to do this. This certainly ought to do some good toward increasing the market for honey. I say this ought to be done by the bee-keepers as individuals and not as bee-keepers, because if this subject is broached by the bee-keepers the manufacturers of these foods will simply consider that Mr. Jones "has an ax to grind."

I inclose a copy of a letter which explains itself. If you consider the matter of sufficient importance, please bring it before the readers of your paper. WM. HAHMAN.

Altoona, Pa., Oct. 30.

Gentlemen:—I have been using your preparation —— —— for breakfast for some time, and like it very much. I have lately tried eating it with honey instead of sugar, and enjoy it even more. As you are doubtless aware that honey is a far more healthful food than sugar, particularly for persons subject to disorders of the kidneys, I thought you might be sufficiently interested to call attention to the fact that —— —— is very good sweetened with a good grade of extracted honey instead of sugar on your directions for the use of this food as given out by you on your circular and on the outside of the package.

[We have been advocating this in our columns for some time, and it is our practice to use honey in place of granulated sugar or other sweets on our morning grain foods. If bee-keepers will practice what they preach, and preach what they practice, especially preach, there is not a doubt that there will be a much larger consumption of honey on the table.—ED.]

STRETCHING BEES' TONGUES BY CROSSING ITALIANS WITH APIS DORSATA; THE PROBLEM OF ELONGATING TONGUES MORE DIFFICULT THAN CHANGING THE COLOR OF THE BANDS.

You ask, page 712, "Is it more difficult to stretch bees' tongues than to change the bands?" I answer, yes, indeed, by very great odds. I have been working on this very line for 15 years; and while I can easily accomplish the one in a single season, it has taken years to reach the other; and I have bees today that can gather nectar from the outer edges of any red clover, but can not reach the full-sized bloom. After years of careful selection I have some clover seed that I will sow in the spring that will produce heads the nectar of the entire bloom of which my bees can reach; so you see I have been working for years for just what you have been discussing of late.

In 1896 my bees gathered me 1500 lbs. of pure red-clover honey, which I don't think another man in America can say. Of this, 800 lbs. was surplus, 700 in brood-chamber. But the quickest way to get a bee that can gather nectar from red clover is to cross our Italians with *Apis dorsata* or some large bee, which can be easily done. D. N. RITCHEY.

Granville, O., Oct. 12.

[I agree with you that it is easier to produce yellow bands than long tongues in bees. To get either we have to take advantage of a sporting tendency in all species toward new varieties. But granting that one is harder than the other, I think we can get both — not simultaneously, perhaps, but each separately.

About crossing *Apis dorsata* with *Apis mellifica*, I hardly think you will be able to accomplish much in that line. It is a well-known fact, I believe, among scientists, that, in crossing one species with another, we can not go any further than to make a hybrid. For instance, a horse crossed with a donkey produces a mule, or a pure hybrid, but the mule itself is sterile. Neither the male nor female has power to propagate itself, because there seems to be a provision in nature to prevent the inter-crossing of species. This would also be true of the honey-bee of this country and of the giant bees of India. The one belongs to the species *Apis mellifica*, and the other to the species *Apis dorsata*. While it might be possible to produce from the two a "pure hybrid," yet we could go no further. If I am misinformed on this point I should be glad to be corrected.

But suppose we could cross *Apis dorsata* with *Apis mellifica*, you will remember that the measurements of the lengths of the tongues of the latter are not as long in proportion to the size of their bodies as the tongues of the former, and the tongues of the giant bees are hardly any longer than the tongues of the average Italian bees.—ED.]

LONG TONGUES AND GOOD WORKERS.

Friend Ernest:—I send you by this mail some workers to have their tongues measured. Their queen is one I bought a year ago for my friend Bails. They are the best honey-gatherers he has by a long way, and probably better than any I have. It is the Moore strain.

Oberlin, O., Oct. 29. CHALON FOWLS.

[It is the old, old story. In every case where we have long-tongued bees we have good honey-gatherers, or at least I have yet to find the case of long tongues when we did not find also that the bees having them were extraordinarily good workers. The tongues of the bees sent measured $\frac{19}{100}$ of an inch.—ED.]

THAT QUEEN, ONE OF WHOSE BEES SHOWED A TONGUE-REACH OF $\frac{23}{100}$ OF AN INCH.

Mr. Root:—Your report, received a few days ago, in regard to the bees produced by the red-clover queen I got of you, is very encouraging indeed. I was surprised and highly pleased when my eye caught the $\frac{23}{100}$ as the length of the tongue of one of her bees. The fact that her bees are inclined to sport makes her of great value as a breeder; for, as you truly say, there is no reason why her queens should not sport also. J. P. MOORE.

Morgan, Ky., Oct. 30.

APPLE BLOSSOM HONEY.

Having noticed in GLEANINGS several times remarks in regard to apple blossom honey, as to quality, I will state that I extracted from 14 hives this season over 600 pounds of what my customers called the best extracted honey they ever had. It being my first experience with the extractor I sold short, but have a little left; and if you care enough about it to mail me a couple of mailing-blocks I will fill them and remail them. J. A. CRANE.

Marion, N. Y., Nov. 2.

EDITORIAL

BY E. R. ROOT

L. H. ROBEY, of Worthington, W. Va., has sent us several lots of bees from his extra honey queens. The tongues aggregate a measurement of $\frac{19}{100}$ and $\frac{20}{100}$. One of the queens is a Root and the other a McIntyre, and all of them are of the leather-colored stock.

MR. OREL L. HERSHISER, 1106 D. S. Morgan Building, Buffalo, has been appointed superintendent of the New York State apiarian exhibit at the Pan-American Exposition. He has been, and is now, on the lookout for choice lots of comb and extracted honey. Thus far he has been only partially successful in finding any, and would like to hear from all York-Staters who have or may have some choice lots which would do for exhibition purposes. Each one will obtain the reward his product merits, at absolutely no expense or loss to the exhibitor, he says.

THE Ontario Bee-keepers' Association (an organization in Canada that practically corresponds to the National Bee-keepers' Association in the United States) will hold its next meeting at Niagara Falls, Dec. 4, 5, and 6. This, next to the Chicago meeting, will probably be the largest convention of bee-keepers of the year on the continent. A first-class program has been arranged, and bee-keepers of the United States are especially invited to attend. The Savery and Windsor hotels offer a rate of $1.50 a day, and the Imperial $1.00. I am planning to be in attendance with my stereopticon, and I learn that Mr. Hutchinson expects to be there also.

HARRY LATHROP, of Browntown, Wis., is much pleased with the prize articles on growing clover, as given in our last issue. He says the thing now is to get the agricultural papers to copy them. This is a good suggestion, and every subscriber interested in having clover grown in his vicinity should bring them before the attention of the local county papers. Do not write, but make a personal visit by calling on the editor and telling him that a digest of all three of the articles, in his columns, would help you as well as the average farmer within the range of his circulation. If you have any particular "pull" on any one of the agricultural papers, use your influence to get them to publish them entire or make a summary of the facts brought out.

LONG TONGUES AND GOOD WORKERS.

Mr. H. E. Jaynes, San Marcial, New Mexico, sends us a sample of bees that show a tongue-reach of $\frac{19}{100}$. He says they are good hustlers, have stored more than any other colony in the apiary, and that he has seen them leave the hive in the evening when it was getting dark, and so dark that the bees returning were hardly able to find the hive; that they continued to store surplus honey right along when all the other bees were unable to keep from starving except as they were fed. I don't care if this does give our friend Jaynes a free advertisement. I am willing to give any queen-breeder or any man who has good stock a free notice, for by so doing it will help our friends and help the fraternity at large in the securing and development, not only of long-tongued bees but good workers.

The fact begins to dawn that bees, in order to make a better showing in their hive than the bees of another, must have long tongues to reach the nectar. If this is so, then it is a physical impossibility for some bees to excel in honey-gathering.—Ed.]

DEATH OF AN OLD CORRESPONDENT; AN AWFUL ACCIDENT.

We are much pained to receive the news of the death of our old friend and correspondent S. P. Culley, Higginsville, Mo., who was killed by the cars near East St. Louis, Ill. The press reports state that the car wheels ran right over his body, severing the head from the trunk. It seems that S. P. Culley & Brother, extensive bee-keepers at Higginsville, Mo., had recently made a contract to export large quantities of bees to Havana, Cuba; and the senior partner, our correspondent, was *en route* with a carload at the time of the accident. He was asleep in the caboose, when, having reached a junction, the conductor awoke him and then proceeded to clamber on top of the car to give the necessary signals to the train men. Mr. Culley, in the meantime, half dazed, dreamily staggered toward the front platform, and walked off and fell between the cars, with the fearful result as noted.

He wrote for the *Progressive Bee-keeper* and for this journal. He was a clear, forcible writer, and was always intensely practical. I remember the time I first read one of his communications in manuscript. As I finished reading it I said to myself, "*There* is a man who has evidently had a large experience," and as I glanced at the end to see who the writer was I could not remember that I had seen his name before; but from that time on I always welcomed his communications. He wrote so recently as Oct. 15, page 799; and this, or at least a part of it, was republished in the last issue of the *American Bee Journal*. He was a comparatively young man—only 40, just in his prime, and I am sure the readers of all the bee-periodicals will miss his familiar writings.

THE AMERICAN BEE JOURNAL.

Forty years ago next January, Vol. I. No. 1 of the *American Bee Journal* made its appearance under the management of our good friend Samuel Wagner. It continued one year; but there did not seem to be bee-keepers enough in our land to keep even one bee-journal running. If I am correct, the breaking-out of the war had something to do with letting it drop for a time. When I "went crazy," however, on the honey-bee, because of the loss of that truant swarm I became so much interested in, I began rubbing my eyes and hunting up the bee-literature of the world. As soon as I found a bee-journal had been published I had every back number, and read them over and over day and night almost. How familiar those pages in regard to the Dzierzon theory look even now! and those strange stories of the wonderful natural history of the honey-bee awaken a thousand pleasant recollections even now as I glance over it. I enjoy even yet exploring new fields of science; but I am afraid the world does not contain any new field that I shall enjoy as much as my explorations in that observatory hive that stood in the window of my home. Well, when I became acquainted with Langstroth and Wagner there was no peace till they promised to get the *American Bee Journal* going again, for Mr. Langstroth seconded my exhortations. Well, it is *still* going; and when I glanced over the issue for Nov. 8 I really felt happy to see such a bright, wideawake, live publication, filled not only with valuable hints but bright, hopeful, sharp witticisms. The thing that troubles me most just now is the fear that our good friend York does not get pay enough for sending such a beautiful journal 52 times for the small sum of $1.00—not quite two cents for each issue. (At one time the *American Bee Journal* was $2 00 for only *12 issues.*) Why, Dadant's account of his trip through Switzerland alone is worth almost the subscription price for an entire year, to say nothing of the report of the Chicago convention. And it is not altogether bees. Friend York, as well as myself, got hold of that little item about having some land of your own. And the *American Bee Journal* is an excellent *family* paper. It is up to the times in standing out strong and fearlessly for good morals, temperance, and purity and honesty. Now, if anybody sees this who has not subscribed for the "Old Reliable," let him make haste to give friend York a little encouragement in the shape of a subscription. This is from your old friend A. I. R.

"N. E. FRANCE LOOKING FOR FOUL BROOD."

Through the courtesy of Mr. Leon Pierce, of Kilbourne City, Wis., I have the pleasure of introducing a prominent Wisconsin bee-keeper behind his back, or in the new *role* of picture-taking. It seems that both Mr. Pierce and Mr. France had taken their cameras to take a few snap shots at the Wisconsin Delles, or Dalles, celebrated the world over for their beauty. Mr. France was poising his instrument, totally absorbed in the beauties shown on the ground glass, and oblivious of what was or might be going on all round about him, when his friend "stole a march" on him by taking a snap shot. This picture he subsequently forwarded on to us, labeled, "N. E. France looking for foul brood." I have always known that the Wisconsin inspector was unusually vigilant; that he never allowed a case of diseased brood to escape his attention; but I did not suppose he was so anxious to find foul brood that he would look for it among the bare rocks.

Joking aside, Mr. France, in his tours over the State, is in the habit of taking along his camera, and he has now a large and interesting collection of pictures which he has taken among bee-keepers—pictures showing foul brood in its various stages; pictures of diseased and infected hives that he has caused to be burned; pictures of bee-keepers and bee-yards, just as he has found them.

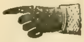
So far as I have been able to learn, Mr. France, with all the vested authority of the State which he has back of him, makes no enemies, but sees that the provisions of the law are rigidly enforced. He has not only performed a signal service for the State, and is doing so every summer, but in a larger way he is doing a service for the whole United States in that he is stamping out and corraling foul brood in a limit so small that it is doing practically no harm. In a like manner Mr. McEvoy, in Canada, is rendering a similar service, and, as I showed in our last issue, we have four energetic inspectors who are doing a splendid work throughout New York; but I hope none of them will try to find either black or foul brood among the bare rocks.

COMB HONEY—HOW TO LOAD IT ON A WAGON.

WE have for years printed what we called our "caution card," which reads as follows:

FRAGILE.

COMB HONEY.



Handle With Extra Care.
Do not Move it on Hand Trucks.
Do not Drop it.
Do not Dump it.
Set it Down Easy.
Haul it only on Vehicles with Springs.

Load with the finger pointing to the Bow, Locomotive, or horse.

The card is intended to be nailed on the case so that the direction indicated by the finger shall be parallel with the combs. Referring to this, one of our subscribers, while admitting that this is correct so far as loading in railway cars is concerned, thinks they, for vehicles commonly used in the public highways, should read, "Load with the finger pointing toward the side of the dray or wagon," the reason being that the wheels on one side are liable to drop into a rut, giving a sudden jar to the combs, and therefore the edges of said combs should point *toward the wheels*. Another says that those same edges should point toward the horses; for when a wagon goes over a sluiceway, or bumps against a bridge that may be four or five inches above the general level of the road, then the jar on the combs, if the edges point toward the wheels, will have a tendency to break the fastenings. This is the position we have taken. The question is, are the *side* dumps more severe than the *forward* bumps over the bridges? We should like to hear briefly from a number of our readers on this point. Of course if a *spring* wagon is used it does not make very much difference how the honey is loaded.

SOME OF THE EVIDENCE (?) THAT WAS INTRODUCED IN THE PEACH-BEE CASE; OR, UTTER V. UTTER.

THERE are no new developments to report in regard to this case, except that I have come in possession of some of the evidence that was presented when the case was tried before the justice. I am informed that the bee-keeper who testified that the bees could bore holes through wood, and work wax as hard as stone, is a man who can neither read nor write; and when he was referred to an article in GLEANINGS, showing that honey-bees can not puncture sound fruit, he is reported to have said, "Pshaw! I do not care any thing for them books. I know more about bees than they do." He has only ten or twelve stands of bees, and about twelve acres of land. It seems he set out a peach-orchard, and when asked by the lawyer what he was going to do with his bees when his peaches came in bearing, he replied, "Keep them until some one sues me."

Another witness for the prosecution testified on direct examination that he saw a bee alight on a peach, and, calling his hired man, they watched the bee, and the result was that the bee punctured the peach, obtained some juice, and flew away; that the peach showed a small puncture. On a cross-examination the lawyer asked, "Did you examine that peach *before* the bee alighted on it?" He replied that he did not; that there *might* have been a hole in it before he saw a bee on it.

This same witness also testified on cross-examination that the twigs or branches produced by the plaintiff were diseased by being affected with the yellows.

The plaintiff's sons, on the stand, said that they had seen bees attack peaches; that the bees would *stand on their hind legs*,* and probe or puncture a peach, and then fly away; that they had witnessed this operation through a magnifying-glass.

I am informed that all who heard the evidence say there was no proof that the marauding bees (although they admitted that they were on the plaintiff's trees) belonged to the defendant. But on this point the plaintiff is reported to have said that when they, the bees, got their "belly full" they would go toward Utter's apiary.

It will be remembered that the plaintiff avers that the defendant's bees stung the trees; but it appears from further investigation that the plaintiff's trees were badly affected by the yellows, for he (the plaintiff) told two witnesses that there were 49 trees in his orchard that he was going to pull out on account of disease.

In spite of such admission and that there was plenty of evidence produced from bee-keepers, to the effect that the bees could not puncture fruit, and that the witnesses for the plaintiff appeared to be prejudiced, and in one instance, at least, incompetent, the justice rendered a verdict of $25 for the plaintiff.

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* Italics mine.

It seems no evidence was taken down in shorthand, so that the case, when it is tried before the higher court, will have to be tried *de novo*.

It does not seem possible that the decision of the lower court will be sustained, but still we can not afford to take any chance; and the bee-keepers of the land, through the National Bee-keepers' Association, should contribute liberally toward the defense of this case by sending in their dollars as membership fee to General Manager Eugene Secor, Forest City, Ia. If you are interested in this case, and desire to see justice done, and your own interests preserved, send in a dollar at once. You can not do it any too soon. Remember that an adverse decision in New York will affect every bee-keeper in every other State in the Union; and we must not let prejudice and ignorance blast or blight out the rights of the honest bee-keeper.

I have since learned that the vicinity where the case will be tried is a great fruit-growing region, and, naturally enough, there will be plenty of fruit-growers who will be willing to render testimony against the bees; hence it becomes exceedingly necessary that we on our part show that, while bees do attack broken, punctured, or unsound fruit, they never puncture a sound peach, never sting trees, and that they are never the original perpetrators of the mischief. In this connection I am pleased to note a valuable article in defense of the bees, by Prof. M. V. Slingerland, of the Agricultural Department, of Aurora, Ill., published in the *Rural New-Yorker* for Nov. 10. Prof. S. completely exonerates the bees, and his testimony means much.

SINGLE V. DOUBLE TIER 24-LB. SHIPPING-CASES, AND THE PRACTICE OF THE COLORADO BEE-KEEPERS; TABLES TURNING.

YEARS ago the first comb-honey shipping-cases were double-tier, and held 48 lbs,, but these were too heavy. Later on, similar cases were made holding 24 lbs.; and then finally we had 12 lb. one-story cases. These were so neat, handy, and pretty that we next were greeted with the appearance of 24-lb. one-tier cases. As soon as these got fairly started on the market, bee-keepers and commission men alike specified that honey should be put up in such cases. The reason assigned was made that, if honey was leaking or broken in the upper set of sections, it would run down and smear the sections below. The trade gradually but surely turned to low-down cases, the largest being 24 lbs., and the smallest 12 lb. But the Colorado bee-keepers, for some reason, went back to the old 24-lb. double-tier cases; but instead of using one large glass, two were used, with a wooden rail between.

Dr. Miller, during all the time we and all the rest were advocating a single-tier case, maintained that he preferred the 24-lb. two-story affair. We told him that he was "behind the times;" but he kept on using the same old thing. Our people—that is, those in the Root Co., like all the rest of the up-to-daters—who buy and handle honey were strong advocates of the flat case—either 12 or 24 lb.; but after buying and selling several carloads of Colorado honey put up in double-tier 24 lb. cases, they found that their prejudice was being removed; and now our honey-man, Mr Boyden, as well as the freight-handlers, say they rather prefer the 24-lb. double-tier to the same capacity flat case. Perhaps it is not possible to give fully the reason; but the same weight approaching the cubical form is more easily lifted and handled than when spread out in a flat package. Handle a carload of it and be convinced. And there is no denying the fact that it has a more symmetrical appearance for it is more in conformity with other packages holding other staple goods.

In the modern use of a double-tier case it is the practice now to use drip-papers under the upper set of sections as well as under the lower one, so that the old objection of honey leaking from the upper to the lower set has been removed.

Our Mr. Boyden was at first afraid that the eastern trade would not take kindly to the tall case with its two rows of sections, and accordingly, in quoting Colorado comb honey, referred to it as being put up in 24-lb. cases without specifying the number of tiers. But out of several cars of such honey sold, there was not a single objection raised.

DR. MILLER'S LONG-TONGUED BEES.

IT will be remembered that Dr. Miller had a couple of queens whose bees outstripped all others in their records in getting honey. Believing that there is a strong connection between long tongues and good working bees, and having seen how close this connection was in many specimens examined for tongue-lengehs, I asked him to send me some bees from two of his best queens. The scale measurement shows for one qneen $\frac{19}{100}$ and the other $\frac{18}{100}$. Both of these measurements are considerably above the average.

When we began this measurement business (for we are measuring the tongues of bees almost every day from almost all portions of the United States) I supposed that long tongues were necessary only for red clover; but it is now apparent that long tongues have an advantage with almost any flora; and I am coming to believe that when bees are good workers it is not because they are not inherently lazy, but because they are physically capable of doing more than the other bees in the apiary; that is to say, I believe all bees would work if they could get the honey. Many bees would starve, and it is these bees that show a short tongue. But the bees that gather honey when others are starving, if measurements and reports mean any thing, are those that have tongues longer than the average.

Further measurements covering next year may disprove these guesses; but so far the straws all point one way; viz., long tongues, good workers; short tongues, poor workers.

OUR HOMES,

BY A. I. ROOT.

My word shall not return unto me void; but it shall accomplish that which I please, and it shall prosper in the thing whereto I sent it.—ISA. 55:11.

There are many Bible promises like the text above, to the effect that righteousness will ultimately triumph over iniquity. In fact, we are told that the meek shall inherit the earth; but when we see how Satan's work is marching on side by side with Christian work, many times overlapping and overtopping it, perhaps, one at times feels that he has reason for feeling discouraged. And there is a class of people—yes, some *Christian* people—who almost sneer and jeer when one insists that goodness is going to triumph over badness. When we take a look at our temperance work, and see how we are thwarted and laughed to scorn by the great trusts and liquor interests, it is not strange that we at times become disheartened. But we must not forget to look on the bright side. Agencies are at work, many times when we least suspect it, coming from directions we had not thought of. In fact, one of my happy surprises came right along in this line. On the recent excursion that Mrs. Root and I took together we were obliged to wait for a train at a railroad-crossing; or, to tell the truth, several roads crossed and recrossed there, making a labyrinth of tracks. I asked permission to go up into the tower overlooking all these intricate switches and side-tracks—the building that we often see in such places, with windows all round. I asked permission of the operator to look over the complicated machinery for changing the switches. He very courteously invited us inside, showed us his maps and rules, and explained the use of the multitude of levers; and when two trains came in sight almost at once he asked us to witness the manipulations that were necessary to permit them to pass. It was really bewildering, and I could not but look on that operator with wonder and respect; yes, I looked at him almost with reverence to think that one human being could handle the lives of trainloads of people, almost without the waste of a second of time, and not make a mistake once in ten thousand times. I do not know what pay such men get; but I do know that all railroad companies pick out the brightest, steadiest, and soberest men for this exceedingly important position. I suggested the idea of the terrible havoc a drunken man or even a *drinking* man might make in such a place. The gentleman assured me that such precautions were taken just *now* that there was very little liability or even possibility that such a man should ever handle the apparatus he had under his control. Afterward an old friend of mine, and a reliable man, informed us something as follows:

"Mr. Root, perhaps you have already been told that the Big Four Railroad Co. will not keep a man who drinks. You may have also heard that if one of its employees is seen going into or out of saloons he must give a satisfactory explanation. Their excuse for being so exceedingly strict is the loss of life and property that has resulted from having a man drunk when he needs the very best sense and intelligence that he possesses. Well, just lately they have decided their employees must not board in any boarding-house, hotel, or other place where a bar is kept on the premises. Inasmuch as it is so exceedingly common to have a bar or saloon in the basement, or somewhere in close combination with most of our hotels, this ruling is going to be a little hard on places that board railroad men. But I for one am glad of it. I think it is just the thing they ought to do."

You may be sure I said, "May God be praised that the Big Four Railway Co. has boldly stood forth in the present crisis, and backed up the work the Anti-saloon League in our various States is trying to do. The saloon *must* go."

I expect to see railway companies, one after another, adopt this rule, or a similar one, for they are all moving forward in this very matter. Many times when we are planning for our bee-keepers' conventions, especially in our large cities, we are gravely informed there is not a hotel of any kind that does not have a bar that one can find if he really wishes to. May God forbid that this state of affairs should long continue.

After the above was in print I noticed an article in the *Sunday School Times* entitled "An Epoch-making Convention of Railroad Men," from which I make the following extract:

> "Is Saul also among the prophets?" Have the railroads become societies for the propagation of the gospel? The above question may well be asked in view of the great railroad conference of the Young Men's Christian Associations held in Philadelphia, October 11 to 14. More than thirteen hundred railroad delegates came from all parts of the United States and Canada, and spent four days in convention, not for the purpose of discussing wages or methods of railroad operation, but to confer together how best they might raise the standard of personal life and character, and extend the kingdom of the Lord Jesus Christ among railroad men.
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> Officers and men met here on common ground. Upon no other could they do it. Friday evening there were present such men as the presidents of the Pennsylvania, Chesapeake & Ohio, Long Island, Cornwall & Lebanon; vice-presidents of the Pennsylvania, Reading, Lehigh Valley; and general managers, superintendents, and other officials of various railroads. Letters of sympathy were read from presidents and leading officials of a large number of the railroad companies of the United States and Canada, who sent their regrets that they could not come. Such ladies as Mrs. Cassatt, Mrs. Russell Sage, Miss Helen Gould, and others, received, and shook the hands of all the delegates, and attended many sessions of the conference. Christianity found here its finest social expression.
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> Perhaps one of the most notable features was the recognition of the greatness and value of this movement by foreign governments. Russia was represented by two railway officials, especially commissioned by the Tsar to attend, and to make a study of this work. They were Messrs. Reitlinger of St. Petersburg, and Shidlovski of Moscow. The German Government was represented by Mr. Glasenap, chief engineer of the German railroads, who is an attache of the German Legation at Washington.
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> On Sunday two meetings were held at the railroad building, and delegates conducted men's meetings at the various branches in the city. It was a day of remarkable manifestations. Fifteen hundred railroad men assembled at three o'clock at the Young Men's Christian Association rooms at Forty-first Street and

Westminster Avenue, and were addressed by Mr. Fred B. Smith, not in a sensational way, but with plainness and directness. His subject was a difficult one, the text being, "One thing thou lackest," and his effort was to show that mere morality was not sufficient. A hundred and thirty railroad men came forward, and for the first time made public confession of faith in the Lord Jesus Christ. At the farewell meeting at the same place probably fifty men and women took the same step. At the Association headquarters, forty-four young men did the same, and at other points there were marked results.

This conference has been a great study in the relations of capital and labor, and its lessons may be quickly learned, but, we fear, will be more slowly put in practice.

Well, it is not alone in the line of temperance work where we may see, if we watch closely, that the teachings of Christ Jesus are being recognized and endorsed. Bright business men, whether they are professing Christians or not, are getting hold of Christ's teachings. Best of all, they are beginning to recognize that the Savior's precepts, even though those precepts go against the grain of the natural man, are, after all, sound reason and plain common sense. Let me illustrate:

You know how often I visit bee-keepers in their homes, and I thank God for the privilege. We do not always agree in theology, and sometimes our convictions are widely apart; but because of a love for all rural industries we often become exceedingly well acquainted, and in the pleasantest way imaginable talk over our peculiar views.

I was once stopping with a bee-keeper over Sunday. Although he was an energetic worker, and a well-posted and successful man in rural industries, he did not particularly admire the type of Christianity that he found round about his home. I am afraid it was not altogether the faults of church-members. He had got into the way that so many of us have of noticing (and I fear magnifying) the faults of his neighbors, or such of them as made some sort of profession of religion. I usually carry a Bible with me, but on this particular occasion it was in my valise at the hotel. I was to speak in the church near by that evening, and I had selected some texts, but I was not sure I had quoted them correctly. I did not really like to ask for a Bible, but I thought I could perhaps find one by looking among the books, without troubling any one. Finally my friend noticed I was searching for something, and asked what I wanted. I told him I was looking for a Bible. I noticed a comical look on his face as he called out to his wife in the next room:

"Say, Mollie, what did you do with the Bible when you had it the other day? Mr. Root wants it."

The reply came from the adjoining room:

"Mr. Root, he is ashamed to tell you the truth, and, like most of the men from Adam's time down to the present day, he thinks he will push the responsibility off from his own shoulders to those of his wife.* The plain square truth is, there is not a Bible in our house anywhere—at least, not to my knowledge. If *he* is afraid to tell you, *I* am not."

Of course, the above was all pleasantry, and one of the little girls brought me a Testament as soon as she heard what was going on, and that contained the texts I wanted. My friend then began defending himself by way of pleasantry, something in this way:

"Mr. Root, I do not quite agree with you and with what the Bible says in many things. For instance, if a man serves you a mean dirty trick, you and the Bible teach that we should take no notice of it, and do him a kindness in return. Now, I think it is a better way to let such a man know that you have found him out, and just what you think of him; for by your plan you are just encouraging him in going on in his meanness."

His wife, however, overheard what was going on, and came to the door and put in a remonstrance something as follows:

"Now, John, you do not believe any such thing, and you do not practice it either. While you and Mr. Root are having so many talks, perhaps you had better tell him that story about the raspberries last summer."

John hung down his head and laughed. But his wife continued:

"Well, if *you* will not tell it, *I* will."

Then she commenced:

"We had a very nice patch of red raspberries over toward the woods; but just as they were getting ripe, and while they commanded a big price, we found somebody was picking them. The matter kept on until John declared he would put a stop to it, even if he had to watch for the pilferers; and he declared he would prosecute them, when he found them, to the fullest extent of the law. Now, John, you tell the rest of it."

John reluctantly, with some promptings from his wife, continued the story, which was about as follows:

One Sunday afternoon he was over by the woods, and accidentally spied two of his neighbors with tin pails going over toward the raspberry-patch. They looked over toward his house anxiously, stooped down behind the bushes until they reached a spot where they could not be seen from the house, even if somebody should be outdoors, and began filling their pails. Before they had reached the coveted position, however, John dropped down in the wheat where he was standing, out of sight, and there were his two neighbors almost within an arm's length, busily appropriating his berries. John had time to meditate. The more he thought about having a row and stirring up the neighborhood with bad feeling over a few raspberries, the more he felt as if it was small business all round for men who could count their acres by the hundred. So he got up naturally as if he had just come on the scene, spoke pleasantly to his neighbors, and told them to go right on and help themselves, etc.

At this juncture of John's narration his wife put in:

"Now, be fair about it and tell Mr. Root that you also picked berries, and helped them fill up their pails."

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* Perhaps I had better mention here, before I forget it, that when I was bidding them good-by all round, at the close of my visit, the good wife said something like this: "Mr. Root, I want you to be sure to come again, and come as soon as you can conveniently; and on your next visit you may be *sure* there will be a Bible in our home."

John hung his head rather sheepishly, and admitted that he did help them fill their pails. Then we had a good laugh all round. This man had been talking skepticism, had been criticising his neighbors who made a profession, and had just said he did not believe in Bible teachings, especially that part which says, "Therefore, if thine enemy hunger, feed him; if he thirst, give him drink; for in so doing thou shalt heap coals of fire on his head. Be not overcome of evil, but overcome evil with good."

At this juncture *I* interposed:

"Why, old friend, you not only put in *practice* Bible teachings, but when you helped them fill their pails with berries you did it 'with a vengeance.' I fear there are not many *professing Christians* who read their Bible, and put its precepts right into practical everyday use as you have done. You conquered them by heaping coals of fire on their heads. Now let me ask, did these men ever pick any more of your berries?"

"I am quite sure they never did."

"Your relations with them from that time to this have been pleasant and friendly?"

"Oh, yes! of course. A man had better lose a good many berries before he has a row with his neighbors."*

I might say in defense of these neighbors that their apology to John was, they went out after wild berries and did not find any; and on the way back his own looked so very inviting they thought they would take a few rather than go home with empty pails, just as you and I would help ourselves to apples or peaches where we found a great plenty of them in going crosslots or something of the sort.

If this little story could be read and heeded in thousands of homes and among thousands of neighbors, how much good it might do! There is more or less pilfering going on almost everywhere. It often commences by taking little liberties; and as the Bible admonishes us to be careful of even the appearance of evil, I do not know but it is well, in view of the example we may set before others, to be exceedingly careful about any sort of trespassing.

When Mrs. Root and I were visiting that "farm in the woods" it rained so we could not get around as we had planned. There were some very fine potatoes just over our line, but the man who owned them lived a good way off. I could not well hunt him up and get his permission to take part of a hill for dinner. So we built a fire under a tree with heavy foliage that shed the rain pretty well, and roasted our potatoes in the coals. They were what I called Empire State, and they were very large and fine. We roasted them until the outside was burned and black. Then we split them in two lengthwise, and by squeezing the blackened sides with our fingers the contents would come out almost as fine and dry as flour. With some salt and bread and butter we had brought along we had an excellent meal. But I have felt a longing ever since to see the man who owned the potatoes, and tell him how we enjoyed them, and thank him for them, and ask him to excuse the liberties we took under the circumstances.

This matter of hunting game on the farms or premises of our neighbors is now calling forth a deal of discussion. Ernest and Huber are both skillful marksmen; but I have urged them again and again not to go on farmers' premises without having full consent and permission. When folks lived in the woods a century ago it was not so important; but now when the land is almost all under cultivation, and where we have quite often specimens of high-pressure gardening, I do think we should be as careful about trespassing on our neighbors' land as we would about going to the stores and groceries and helping ourselves. By the way, some pretty good people *have* a fashion of helping themselves to fruit without so much as a "thank you," where fruit is offered for sale. It is all wrong. It is one of the first steps toward downright crime. If we expect the promise in our opening text, of that good time coming, we should all be exceedingly careful about giving any sort of ground for uncharitableness and unkind feeling among the people round about us where God has placed us. After the words of my text in the 55th of Isaiah, there are two more verses containing wonderful promises, and I think they will be a fit closing for my talk today. The promises are to those who heed God's words, who try to love their enemies, and to do good to those who hate them. I believe in these promises, for I have had glimpses of their fulfillment in my own life during the past few weeks.

> For ye shall go out with joy, and be led forth with peace; the mountains and the hills shall break forth before you into singing, and all the trees of the field shall clap their hands.
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> Instead of the thorn shall come up the fir tree, and instead of the briar shall come up the myrtle tree; and it shall be to the Lord for a name, for an everlasting sign that shall not be cut off.

NOTES OF TRAVEL
BY A. I. ROOT.

OUR MICHIGAN TRIP.

When Mrs. Root and I arrived at Traverse City we procured a horse and buggy and started along the shore of Traverse Bay to our farm in the woods. As our land does not run clear down to the water we were obliged to build on quite a little elevation; and I rather favored a home on the hills—at least on the foot-hills. Mrs. Root is not sure, however, that she would like to be very much higher than the water or the main road, therefore we made our first stop at the home of Mr. Cole, mentioned on page 782, Oct. 1. Mr. and Mrs. Cole have their home right adjoining a peach-orchard away up on the summit of one of the hills. We tied our horse by the roadside, and walked up-hill for exercise; and it was pretty severe exercise, I tell you. But we were amply repaid by a glimpse of the beautiful grounds on the summit. First there was a very pretty house and dooryard, and a beautiful view of the bay with its shores and islands on the opposite sides, and also a glimpse of Traverse City, three or four miles away. Just a little back of the house was a five-acre orchard, mostly peach-trees. I told you, on the page I referred to, that friend Cole had already sold $500 worth of peaches. Well, since then, to his surprise, he has sold almost another $500 worth, and yet there are only five acres of land, and this land contains a great many kinds of trees besides peach. We found beautiful luscious peaches, not only all over the ground, but quite a few still hanging on the trees. After we had eaten as many as we cared for, and discussed peach-growing on the Traverse hills, Mrs. Cole invited us to see *her* speculation. On the south side of the peach-orchard was a row of chestnut-trees, and the nuts were just ready to break out of the burrs. Quite a lot of them were scattered about on the ground. Dear reader, did you ever pick up chestnuts when a child? and do you think you will ever be too old to feel like shouting for joy when you see the bright brown nuts scattered about among the fallen leaves? Mrs. Cole says she gets $5.00 a bushel for the nuts, and the trees are just beginning to bear quite profusely. She told me how many years ago they were planted, but I have forgotten. She has only the native American chestnuts. She has not yet tested the large new kinds; but she has proved beyond question that the top of the hills in the Traverse country is just the place for growing chestnuts as well as peaches. Just a little below the edge of the hill is a spring, and a little cheap hydraulic ram sends soft spring water into the house and barn, and wherever wanted for the stock. The apparatus has been running for 14 years; and this summer Mr. Cole thought the pipe must be getting old, and prepared to put in some new ones; but when he pulled out the old ones he found them just as clean and perfect, apparently, as when he put them in, and so he did not make the exchange.

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*I fear I have not given the above conversation exactly as it occurred, but it was substantially as I have stated it.

Now, this is a valuable point for those living in the Traverse region, at least. The pipe was black iron. The makers of these rams say this is much more durable than galvanized iron that is so often put in with a mistaken notion. Much of our spring water will dissolve the zinc on the iron, and produce an insoluble precipitate that incrusts the pipes, while common black iron will remain perfectly clean. At the foot of the hill is a watering-trough made of cast iron, and of sufficient elevation so any horse can drink without being unchecked. I am glad to know these watering-troughs fed by springs are a common feature near Traverse City. These running springs are a perpetual temperance sermon; and I do not know but it is another sermon also for the Humane Society, letting the horses have drink with so little trouble that they are not likely to suffer from thirst. May God bless the people who are providing these drinking-fountains.

A little further on we took a crooked cross-road that ran up between the hills toward friend Hilbert's. In California we would say it was a road running up the canyon. We found the potato-growers busy harvesting their crop. Men, woman, and children were hard at work pulling the tubers out of the beautiful soft mellow soil, putting them in heaps and covering them with straw, and then with dirt. They are kept in this way until they have time to draw them to market or until it seems to be a good time to sell. If the grower decides to keep them till spring he only needs to put on more dirt and more straw. There was a good deal of merriment when I was able to demonstrate to the Hilbert family that I had actually "captured" Mrs. Root and got her up in the Traverse region; and I hurried back with the horse and came up again on my wheel.

Mrs. Root returned home a week sooner than I did. I wanted to stay and construct a bicycle-path from the top of the hill, where our house is to be built, down to the valley or bottom of the ravine. I first selected the lowest point between the hills for a passageway, then made my grades along the steep hillsides around through one ravine and out of another until I reached the foot, making a regular incline with no grade too steep to ride up or down. The bushes and small trees were so thick, as I have explained before, that one could hardly get through at all. Mrs. Root did succeed in getting a glimpse, over the fallen trees and bushes, of the spot where our house is to be located, but that was about all.

Well, after she had started home alone I borrowed of a neighbor an ax, a hoe, and a mattock. I brought along with me some strong line, a spirit-level, and a compass, and then I commenced work alone in the woods. As I was unused to such work I was obliged to sit down every little while on a log, and rest. With the help of a neighbor's thirteen-year-old boy, and a crosscut saw, we got out of the way part of the logs that lay across the path.* But we were next confronted by an old hemlock log three or four feet in diameter. Its decayed sides, while the middle was almost solid, together with its great size, made it too big a task for both myself and my young friend Orrville. Just before dinner I managed to get an expert wood-chopper to come and help me three or four hours. I thought it was about half a day's job to cut through that hemlock log; but he did it in little more than half an hour. In about three hours he had got about every log out of my way by the use of his ax alone. I just began to understand that it was a trade by itself to use an ax effectively. I watched that man while he stripped himself of all useless clothing, and then I noticed, too, how he made every stroke of his sharp ax count. His engagement would not permit him to stay for more than about three hours; and by the way he worked I thought a dollar would be cheap enough for his services; but he was satisfied with just half that amount.

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* At one point my bicycle-path had to go down pretty well into a ravine and then up on the opposite side, in order to make a short cut. This ravine was full of rotten logs, leaves, and accumulations of vegetable matter that have piled up there for ages. Well, out of the rotten wood and debris were some of the rankest and most luxuriant raspberry-bushes I ever saw; and while we were running a crosscut saw Orrville held up some clusters of ripe raspberries, about as tempting as any thing I ever saw in my life, and we actually had quite a feast on the most luscious ripe raspberries I ever tasted, during the last week in October. The variety is a very soft red raspberry that would not answer well for shipping, but can hardly be excelled for eating out of the hand right from the bushes. I do not know whether this is a regular thing—raspberries so late in this region—or whether it was on account of the late warm fall weather.

Well, the next morning I borrowed a double-bitted ax. Orrville helped me grind it; and as it was not an easy matter to find help, because everybody was digging potatoes, I went at it alone. Now, dear readers, I am hitting on something that well deserves a place in our department of Health Notes, but I think we will let it run right along here. When I commenced chopping I had to stop about every half-hour. I removed my coat and vest, took off my collar, hung my cap on a limb, and did the best I knew how to learn to chop. When I found my resting-spells began to be shorter, and my chopping-spells longer, I felt proud and happy. An hour or two ago Blue Eyes brought her blue-eyed boy over to our house and exhibited him to his admiring grandmother and grandfather. He is just one year old to-day. He has found out that he can walk, at least a little, and it is the most interesting amusement he probably ever struck on before in his short life. He keeps plunging ahead, laughing at his falls and mishaps, and crowing over his victories; and when he gets clear tired out then he takes a big sleep. I happened to blunder into the darkened room, and the picture of his little self sprawled out on the bed while he drew in the long breaths of infant slumber made me think of myself when I was learning to chop on that farm in the woods. I, too, required a good nap a little before dinnertime. Such violent exercise demanded, of course, a large amount of nourishing food. Then I began making experiments to see what would help me to *hold out* best. Dear reader, what food do you suppose braced me up *best* for putting in big licks with that ax and grubbing-hoe? A good-sized bowl of scalded milk, together with nice bread and butter was the diet ahead of all else. During the second day I rested only once or twice in the forenoon, and finally put in a whole afternoon without once stopping, hardly, to take breath. I worked so late into the darkness of night that Mrs. Heinforth, at whose house I boarded, began to feel uneasy, and thought of sending the children up into the woods after me. One-year-old Wynne is not prouder of the progress he makes every day in learning to walk than I was in having got up to the point, in one short week, where I could swing an ax all day, and rejoice in my strength. Bicycle-riding is good, but it does not exercise the *whole* body as does chopping; neither does it *always* earn your bread and butter.

After I had satisfied myself that I was *not* getting used up and not getting so sore next day I could not move, I thought I would try, just for the fun of it, seeing just how far this new reinforcement of muscle would help me to take a long bicycle ride. So I stopped long enough to ride 50 miles during one of the short days in the last of October, and again I had one of my happy surprises. I was not used up, I was not much tired, and I was not sore. I just felt tough and hearty. This experience is worth to me more than I can estimate. It is a most precious answer to my prayer so often breathed during the years past, that God would guide me in directing my fellow-men how to recover from sickness and gain health. I craved for such advice as the great Father above could consistently give his children.

Now, I have not learned all the secrets, by any means, for getting rid of disease and securing life and happiness; but I have certainly struck on one great secret. This Grand Traverse region may be a very healthy locality —no doubt it is. Dr. Munson, who is at the head of the great asylum in the suburbs of Traverse City, told me he had watched the matter for many years, and he had never yet been able to find a single case of *malarial fever* that originated in the Traverse region. There is not and never has been any chills and ague. He said he had known a great many people who came to the locality, subject to malarial attacks; but so far as he could learn they all recovered sooner or later. I talked with other physicians in regard to the matter, and there seems to be no malaria in this region.

Another important requisite in the matter of health is, that my work was something that greatly *interested* me. I felt as if I wanted to chop out that winding wheel-path through those ravines and around the hills more than I wanted to do any thing else in the world. My *heart* was in it While at work I remembered the injunction to fill the lungs with air; and standing in the breeze that came over those hills I drew in the perfumed air from the evergreen and other trees, again and again, for I felt myself a bigger man than I ever had been before. Now, please bear in mind, dear friends, that this experience came to a man almost 61 years old. We are not surprised that the year-old boy crowed with delight when he found he could "navigate" from one chair to another on the little feet that God gave him; well, I was a good deal pleased and almost crowing *too*, with delight to find I could learn new tricks of strength and endurance when over 60 years old, and on a diet principally of good bread and milk, the two great staples, the most obvious and natural food for mankind.

Now I want to tell you about that fifty-mile wheelride. I had often stopped during my work to look across the bay at the opposite shores, and especially to look with some curiosity on a narrow tongue of land that shot out into the sea away over in the northeast horizon. I took my wheel and skirted the shore. The first half-day I went clear around and stood on the tongue of land called Traverse Point Resort. As I looked back from a little eminence and viewed the hazy path, almost in the horizon, that I had made since I started, it seemed almost incredible, and I thanked God again for the invention of the wheel. I passed the night at Old Mission in Grand Traverse Co. Here are some more beautiful resorts ; in fact, the summer cottages made a beautiful little town, but it was a dead town at the time of my visit, for the resorters had all gone away to stay till another season. At Old Mission I asked a man what he would charge to take me over to Elk Rapids with his gasoline-launch. He said if there was a load he would take us for 40 cts. apiece ; but he could not make a trip for one passenger alone short of $2.50. So I decided to make the trip going around the bay. If you will get your atlas and turn to the State of Michigan you will get a good idea of these wonderful peninsulas in this Traverse region. At one point in my trip I asked the question of a man I met if I could not save several miles by following the shore around through the woods. He said I could, but the road was so sandy nobody could ride a wheel far. I felt so well, however, and also wanting a little adventure, I decided to try it, and I found an abundant use for all the muscle I could scrape up, I assure you. Had it not been for my lessons in chopping I think I should have played out ; but I took it leisurely and walked where the sand was worst. Sometimes where there was hard ground most of the way, and brief patches of sand intervening, I would get up momentum enough to plow through the sand and reach solid ground. At one such spot the sand was worse than I had anticipated. My wheel slewed, and I went headlong over into the bushes. Before I struck the ground, however, I caught a glimpse of some beautiful red berries plentifully sprinkled amid a vivid bright green. After I rolled down among them a familiar perfume gave me a happy surprise. The ground was covered with wintergreens as thick as you ever saw clover in a clover-field ; and these wintergreens were covered with bright-red luscious berries, sometimes half a dozen berries in a cluster. I left my wheel lying in the sand, and just sprawled myself out and had "rest and refreshment." Then I gathered a beautiful bouquet of wintergreens and berries, and brought them home to my good old mother in Ohio. After my refreshment the woods began to look a little more open, and pretty soon I saw a footpath that seemed to lead somewhere. Oh how I do love to see a footpath when I am wandering in the woods ! It soon led me to a well-traveled highway. Toward noon I came into a little town where there was no hotel ; but somebody said he thought I could get my dinner at a certain house. I stated my case to an old gentleman whom I found in the yard. Pretty soon I overheard at the other side of the house something as follows :

"There is an old man out here, and he wants to know if you can give him his dinner."

"What sort of man does he look like?"

"Oh! he's quite respectable-looking. I guess he is quite a gentleman."

"Well, bring him along."

We had beautiful bread for dinner that day, just as we always do in the Traverse region ; and then there were canned black raspberries. Why ! every spoonful of those berries was a happy surprise. And then we had some tomatoes with sugar and vinegar. You know I have been one of the dyspeptics that could not bear to use vinegar ; but I can not remember that I ever ate any tomatoes so wonderfully delicious before in my life. It set me to thinking that the tomato is a wonderful gift from God that has never been half appreciated (can somebody tell us right here how many million cans of tomatoes are put up in the United States every year?).

After another nap such as only farmers and wheelriders can appreciate I went on up hill and down until I came to Elk Rapids. About three miles this side of the city I saw a lake perhaps a mile long and half a mile wide. A deep dredge canal that went away down into the earth so far it almost frightened one to look at it was emptying the inky waters of this lake into Traverse Bay. Where I took dinner they informed me that this lake bottom was a bed of marl. Nobody knew just how far down it went. Not only the bottom of the lake, but the meadows adjoining, were almost pure marl just below the surface. A great syndicate had discovered it and bought the lake. Just before reaching Elk Rapids I saw a great crowd of men at work on some beautiful buildings. I knew it was some enormous manufacturing plant, but did not at once connect it with the deposits in that lake. It is to be the largest cement-factory in the United States. Steam and electricity, and every known force, are to be employed. There are underground passageways, tracks and side-tracks, pipes and cables, monstrous cranes and elevators, and every thing necessary for a fully equipped manufactory up with the present times.* Then I visited an immense plant for the manufacture of charcoal iron. The ore comes from up along the lake, but the charcoal is burned right there on the ground. Everybody has heard of charcoal iron and its superior quality. It is thus termed because they use charcoal in its manufacture instead of coal that comes from the mines. Here at Elk Rapids, as well as at Traverse City, they have water power to run all their mills and factories, and a great surplus is constantly going to waste because there are as yet no enterprises or industries to utilize it.

From Old Mission, where I started in the morning, around the bay to Elk Rapids, is fully forty miles. Then I rode over ten miles more back to Traverse City, making fifty miles between daylight and dark; and I could have easily ridden twenty miles more had I not spent so much time in investigation. As I stood on a pretty fair sized hill that enabled me to look across at Old Mission, and along the shore over the whole pathway I had traveled during the day, it seemed again as if it were almost incredible that a man by his unaided strength could traverse all that territory in one short day.

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*A beautiful object-lesson, demonstrating the value of this deposit of marl, is found on a piece of road near the lake, about a mile in length. This cement road is almost like an asphalt pavement. When it is a little damp it looks as if somebody had not only graded it off, but smoothed the surface down with a putty-knife, very much as you would spread putty ; and it is so hard that the wheels of a vehicle make scarcely a visible impression on it. This same marl is largely used for making cement roads through Traverse City, so I am told. There is no stone flagging to be found in any of these northern cities ; but they have a most beautiful artificial stone for walks, made of this "home-made" Portland cement, and it seems to stand storms and severe freezing during winter, without any damage whatever—that is, wherever the work is properly laid on sufficient foundation.

I had planned some more work on my farm for the next day, and, indeed, I did not feel one bit sore or lame or fatigued. On the contrary, I felt more like swinging the ax again than doing any thing else; but a drizzling rain and lowering clouds made me think that the November storms were at hand, and I feared, too, I was wanted at home; so I reluctantly started back for my home in Ohio. But when the sun came out after an hour or two, I felt blue and disappointed all day to think I could not have had just one more day's outing on "that farm in the woods."

Special Notices by A. I. Root.

BASSWOODS FOR FALL PLANTING.

Our young basswoods have been making a beautiful growth during the late fall weather. We have just had our first killing frost this 10th of November, and the leaves are now beginning to drop, indicating it is time for fall transplanting. We shall be glad to fill orders at the following prices:

One foot and under, each 5c; 10, 30c; 100, $2.00. The above by mail, each 8c; 10, 35c; 100, $2.25. One to five feet, 10c; 10, 75c; 100, $5.00.

In regard to which is better, fall or spring planting, I am unable to say. We have had scarcely a failure in putting out basswoods either way. Trees of the above sizes are usually sent by mail or express. In large quantities they can be sent safely by freight, especially if they go south where the ground is not liable to freeze up before they can be planted.

SOILING CROPS AND THE SILO.

The above is the title of another excellent book by Thomas Shaw. Like his other books, open it anywhere, and any one who is interested in almost any branch of farming will find the book so interesting that he is loath to lay it down. I consider Prof. Shaw as one of the soundest and clearest thinkers we have at the present time on agriculture. While he has enthusiasm, one is impressed all along with his exceeding fairness and honesty. As an illustration: Most of the books on the silo are written by those who are strong in its defense. They unconsciously present the desirable features, but not so much the undesirable ones. Now, this may be all right in a measure; but Prof. Shaw seems just as anxious to tell us of the obstacles in the way as of the advantage to be gained. The book is not only for those who farm on a large scale, but for the average day laborer who has a cow and a garden. Shall he hire his cow driven off to pasture, or shall he grow crops for her and keep her in a comfortable stable? By the latter plan he can get a much larger amount of milk, and perhaps get more money from his cow. And then he is on the highway to "high-pressure gardening," because soiling crops is emphatically gardening up to the highest notch.

Friend Shaw is great in the fight against weeds; and by the soiling plan every weed may be driven from your premises without ever touching them with a hoe. Every one interested in the growing of crops, it seems to me, should read this book, even if he does not practice siloing or the use of a silo, because the book touches on every page so many vital points on this whole matter of growing crops profitably. The price of the book is $1.50 postpaid; and I am so anxious to see our friends benefited by it that we will mail it for $1.25, or we will send it clubbed with GLEANINGS one year for $2.00. It contains 364 pages, lot of pictures, and is neatly bound in cloth. It is published by the O. Judd Co.

SEED POTATOES.

NAME. Varieties are in order as regards time of maturing; earliest first, next earliest second, and so on.	1 lb. by mail.	3 lbs. by mail.	½ peck.	Peck.	½ bushel.	Bushel.	Barrel—11 pk.
Red Bliss Triumph	$ 18	$ 40	$ 30	$ 40	$ 75	$ 1 25	$ 3 00
White Bliss Triumph	18	40	30	40	75	1 25	3 00
Early Ohio	18	40	30	40	75	1 25	3 00
Early Trumbull	25	50	35	50	85	1 50	3 50
Bovee	18	40	30	40	75	1 25	3 00
Early Vermont	15	35	20	35	60	1 00	2 50
New Queen	15	35	20	35	60	1 00	2 50
Lee's Favorite	15	35	20	35	60	1 00	2 50
Freeman	18	40	30	40	75	1 25	3 00
Twentieth Century	25	50	35	50	85	1 50	3 50
State of Maine	15	35	20	35	60	1 00	2 50
Maule's Commercial	18	40	30	40	75	1 25	3 00
Carman No 3	15	35	20	35	60	1 00	2 50
Sir Walter Raleigh	15	35	20	35	60	1 00	2 50
New Russet	15	35	20	35	60	1 00	2 50
New Craig	15	35	20	35	60	1 00	2 50

Seconds of any of the above will be (while they last) half the price of firsts, with the understanding that the seconds contain not only the small potatoes but those that are scabby, prongy, or cut in digging. The scabby ones are good for seed if treated in the usual way with corrosive sublimate, but they are a little more trouble.

SEED POTATOES AS PREMIUMS.

Any one sending $1.00 for GLEANINGS, and asking for no other premium, may have 25 cents' worth of potatoes. And any one who is a subscriber, and who sends us $1.00 and one new name may have 50 cents' worth of potatoes; but if the potatoes are wanted by mail the subscriber must pay postage. Please notice we give potatoes as premiums, but we can not afford to give *postage stamps*. A descriptive sheet of the above varieties will be mailed on application.

CONVENTION NOTICE.

MICHIGAN STATE BEE-KEEPERS' CONVENTION.

This convention will be held at Traverse City, Dec. 26 and 27, commencing at 2 o'clock on the 26th. No preventing providence, A. I. R. expects to be on hand during the whole convention, especially as this is right in the field where he has been writing up his Notes of Travel. President Hilton writes as follows in reply to my suggestion of being present at the convention:

> I can not tell how pleased I am that you are to be with us at our State bee keepers' meeting. I have been much interested in your talks about Leelanau County That county being in my congressional district I shall feel you are more than ever "my neighbor" when you move to your summer home.

The twelfth annual meeting of the Minnesota Beekeepers' Associction will be held in Plymouth Church, Cor. Eighth St. and Nicollet Ave., Minneapolis, Minn., Wednesday, Thursday, and Friday, Dec. 5, 6, and 7, 1900. An excellent program is prepared, and a good time promised. The Horticultural Society meets at the same time and place. Purchase railroad tickets to their society, taking a certificate for amount paid, and, if 100 certificates are secured, a reduction to one-third fare for the return trip can be had.

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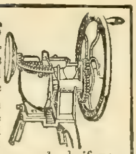

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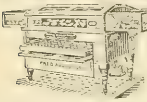

everything between the covers of our **20th CENTURY POULTRY BOOK** in order to best succeed in the poultry business. It tells everything necessary and no more. It's a compend of poultry knowledge. Among other things it fully describes **Reliable Incubators and Brooders**, which are known and used all over the world. We mail the book for 10 cents as long as they last. Hurry your order in at once.

Reliable Incubator & Brooder Co., Box B-49 Quincy, Ills.

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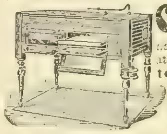

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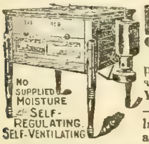

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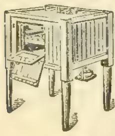

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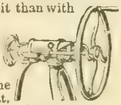
EASY EGG MONEY

A man can easily make money selling eggs if he can but get the eggs. He can get the eggs **sure**—twice as many, if he will feed his hens on Green Cut Bone. No better way to prepare it than with

ADAM'S GREEN BONE CUTTER



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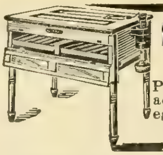

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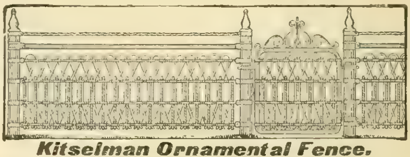

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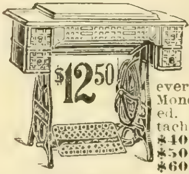

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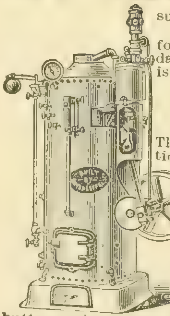

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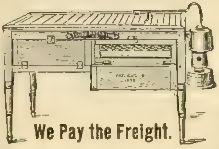
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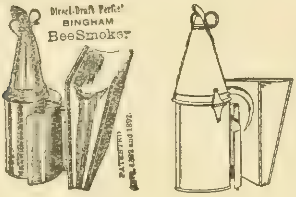

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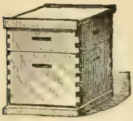
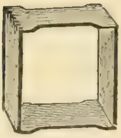

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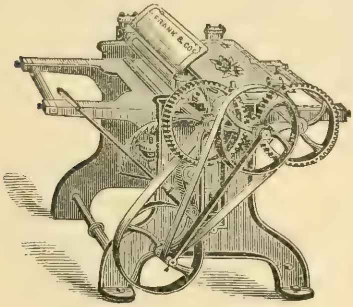

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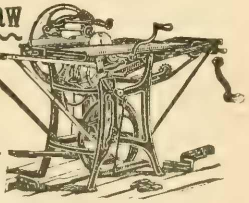

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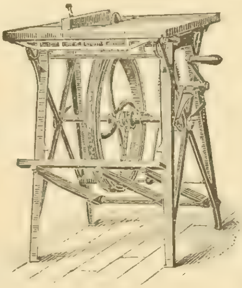

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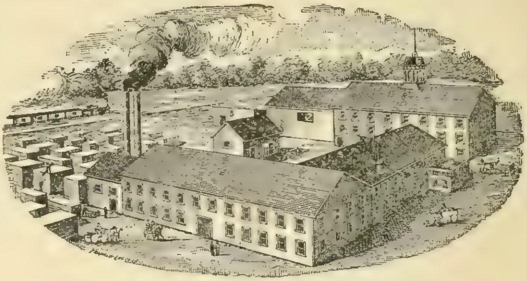

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FANCY.—All sections to be well filled, combs straight, firmly attached to all four sides, the combs unsoiled by travel stain, or otherwise; all the cells sealed except an occasional cell; the outside surface of the wood well scraped of propolis.

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No. 1.—All sections well filled except the row of cells next to the wood; combs comparatively even; one-eighth part of comb surface soiled; or the entire surface slightly soiled.

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In addition to this the honey is to be classified according to color, using the terms white amber and dark; that is, there will be "fancy white," "No. 1 dark," etc.

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THE COLORADO HONEY PRODUCERS' ASSN.,
Nov. 14. 1519 Wazee St., Denver, Col.

ALBANY.—Honey market keeps firm. More could be sold at full prices than is coming in. Extra white comb, 17@18; No. 1, 16@17; No. 2, 14@15; best buckwheat, 13@13½; No. 1 buckwheat, 12@13. Extracted white, 8½@9; amber, 7@7½; dark, 6.

MACDOUGAL & CO.,
Successors to CHAS. MCCULLOCH & CO.,
Nov. 21. Albany, N. Y.

NEW YORK.—We are pleased to quote market conditions as follows: Arrivals of comb honey rather light We quote as follows: Fancy white comb, 15@16; No. 1 white, 14; No. 2 white, 13; buckwheat, 10@11. Extracted buckwheat, 5½@6. Beeswax, 27@28.

FRANCIS H. LEGGETT & CO.,
Franklin, West Broadway, and Varick Sts.,
Nov. 21. New York City.

NEW YORK.—Good demand continues for all grades of comb honey. We quote fancy white, 15@16; No. 1 white, 14; No. 2 white, 12@13; amber, 12; buckwheat, 10@11. Extracted in fairly good demand at 7½@8 for white, and 7 for amber; off grades and southern, in barrels, at 65@75 per gallon, according to quality. Not much demand for extracted buckwheat as yet. Some little selling at 5½@6. Beeswax firm at 28.

HILDRETH & SEGELKEN,
Nov. 20. 120, 122 West Broadway, New York.

PHILADELPHIA.—Comb honey seems to be more plentiful among the cheaper grades. Honey in California, Nevada, and the far West must have been very plentiful, when they can't sell it and have to ship it East on consignment. Extracted fancy, 8; No. 1, 7; amber, 6. Beeswax, 27. We are producers of honey—do not handle on commission. WM. A. SELSER,
Nov. 20. 10 Vine St., Philadelphia, Pa.

SCHENECTADY. — Receipts of buckwheat comb honey have been in excess of sales since our last report, but white clover continues scarce. We quote fancy white, 16@17; fair to good, 14@15; buckwheat, 11@12. Have sold some considerable dark extracted, but have had to shade quoted prices to do it.

CHAS. MCCULLOCH,
Nov. 20. Schenectady, N. Y.

BOSTON.—Our honey market is very strong at the following prices, with supplies very light: Fancy, 1-lb. cartons 17; A No. 1, 15@16; No. 1, 15; No. 2, 12@13. Extracted, 7½@8½, according to quality. We can see no reason why these prices should not be well maintained right through the season, and advise shipping. BLAKE, SCOTT & LEE,
Nov. 19. 31, 33 Commercial St., Boston, Mass.

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Nov. 22. W. C. TOWNSEND, Buffalo, N. Y.

DETROIT.—Fancy white comb 15@16; No 1, 13@14; darker and amber, 10@12. Extracted white, 8@8½; dark and amber, 6@7½. Beeswax, 26@28.

Nov. 22. M. H. HUNT & SON, Bell Branch, Mich.

CHICAGO.—Fancy white, 16. No. 1 white, 14@15; fancy amber, 12@13; No. 1 amber, 10; fancy dark, 10; No. 1 dark, 8@9 Extracted white, 7½@8; amber, 7@7½; dark, 6½@6¾. Beeswax, 28.

R. A BURNETT & CO.,
Nov. 19. 163 South Water St., Chicago, Ill.

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" " Pearson's, and McClure's	4 00	2 75
" " Cosmopolitan, and Pearson's	4 00	2 50
" " and Cosmopolitan	3 00	2 00
" " and Pearson's	3 00	2 00
" " and McClure's	3 00	2 25
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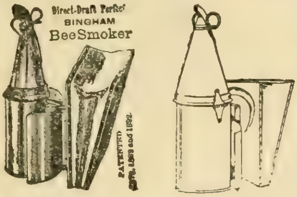

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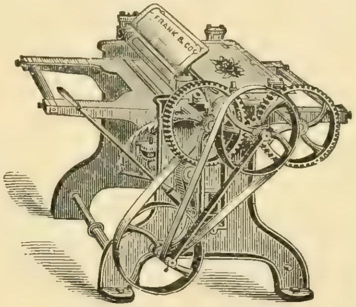

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10 | Fuller's Grape Culturist **..............................1 15

8 | Domestic Economy, by I. H. Mayer, M. D.** ... 30

This book ought to save at least the money it costs, each year, in every household. It was written by a doctor, and one who has made the matter of domestic economy a life study. The regular price of the book is $1.00, but by taking a large lot of them we are enabled to make the price only 30 cents.

10 | Farming for Boys*..1 15

This is one of Joseph Harris' happiest productions, and it seems to me that it ought to make farm-life fascinating to any boy who has any sort of taste for gardening.

| Farming with Green Manures, postpaid**........ 90

7 | Farm, Gardening, and Seed-growing** 90

12 | Gardening for Pleasure, Henderson*.................1 35

12 | Gardening for Profit**......................................1 35

8 | Gardening for Young and Old, Harris**...........1 25

This is Joseph Harris' best and happiest effort. Although it goes over the same ground occupied by Peter Henderson, it particularly emphasizes thorough cultivation of the soil in preparing your ground ; and this matter of adapting it to young people as well as old is brought out in a most happy vein. If your children have any sort of fancy for gardening it will pay you to make them a present of this book. It has 187 pages and 46 engravings.

3 | Grasses and Clovers, with Notes on Forage Plants 20

This is by Henry A. Dreer, author of the book, "Vegetables Under Glass" that has had such a large sale of late. This little book tells how six tons of grass has been grown to the acre, and gives much other valuable matter.

10 | Greenhouse construction, by Prof, Taft**.........1 15

This book is of recent publication, and is as full and complete in regard to the building of all glass structures as is the next book in regard to their management. Any one who builds even a small structure for plant-growing under glass will save the value of the book by reading it carefully.

12 | Greenhouse Management, by Prof. Taft**........1 15

The book is a companion to Greenhouse Construction. It is clear up to the times, contains 400 pages and a great lot of beautiful half-tone engravings. A large part of it is devoted to growing vegetables under glass, especially Grand Rapids lettuce, as well as fruits and flowers. The publisher's price is $1.50; but as we bought quite a lot of them we can make a special price as above.

5 | Garden and Farm Topics, Henderson**........... 60

5 | Gregory on Cabbages, paper* 20

5 | Gregory on Squashes, paper*........................... 20

5 | Gregory on Onions, paper*.............................. 20

The above three books, by our friend Gregory, are all valuable. The book on squashes especially is good reading for almost anybody, whether they raise squashes or not. It strikes at the very foundation of success in almost any kind of business.

| Handbook for Lumbermen................................ 05

5 | Home Pork-making; 125 pages, illustrated...... 40

I think it will pay well for everybody who keeps a pig to have this book. It tells all about the care of the pig, with lots of pictures describing cheap pens, appliances, all about butchering, the latest and most approved short cuts; all about making the pickle, barreling the meat, fixing a smoke-house (from the cheapest barrel up to the most approved arrangement); all about pig-troughs; how to keep them clean with little labor; recipes for cooking pork in every imaginable way, etc. Publisher's price is 50 cents, ours as above.

10 | Household Conveniences.................................1 40

15 | How to Make the Garden Pay**........................1 35

2 | How to Propagate and Grow Fruit, Green*...... 15

2 | Injurious Insects, Cook.................................... 10

10 | Irrigation for the Farm, Garden, and Orchard* 1 10

By Stewart. This book, so far as I am informed, is almost the only work on this matter that is attracting so much interest, especially recently. Using water from springs, brooks, or windmills to take the place of rain, during our great drouths, is the great problem before us at the present day. The book has 274 pages and 142 cuts.

3 | Maple Sugar and the Sugar-bush**.................... 32

4 | Peabody's Webster's Dictionary........................ 10

Over 30,000 words and 250 illustrations.

5 | Manures ; How to Make and How to Use Them ; in paper covers.. 30

6 | The same in cloth covers.................................. 65

| Nut Culturist, postpaid......................................1 50

3 | Onions for Profit**.. 40

Fully up to the times, and includes both the old onion culture and the new method. The book is fully illustrated, and written with all the enthusiasm and interest that characterizes its author, T. Greiner. Even if one is not particularly interested in the business, almost any person who picks up Greiner's books will like to read them through.

| Our Farming, by T. B. Terry**................. 1 50

In which he tells "how we have made a run-down farm bring both profit and pleasure."

If ordered by express or freight with other goods, 10c less.

1 | Poultry for Pleasure and Profit.**.................... 10

8 | Practical Floriculture, Henderson.*............1 10

10 | Profits in Poultry.* 75

1 | Silk and the Silkworm 10

10 | Small-Fruit Culturist, Fuller 1 10

2 | Sorghum, Stock Beets, Strawberries, and Cement Floors. By Waldo F. Brown................ 08

10 | Talks on Manures* 1 35

10 | The New Agriculture ; or, the Waters Led Captive (a $1.50 book) 40

11 | The New Egg-Farm, Stoddard**...................... 70

This is an enlarged edition of the 50-cent book published 25 or 30 years ago by H. H. Stoddard. If I could have only one poultry-book it would be the New Egg-farm. This book is of special value to me because it not only discusses most emphatically the value of *exercise* to poultry, but it touches on the value of exercise to all other animated nature including humanity. The book has over 300 pages and 150 illustrations. It is entirely different from any other poultry-book in the world, inasmuch as it discusses mechanical contrivances so that all the varied operations of a poultry-farm may be done as much as possible with the aid of machinery. The regular price is $1.00, but by buying a quantity we are able to furnish it at price given.

2 | Treatise on the Horse and his Diseases........ 10

5 | Tile Drainage, by W. I. Chamberlain.......... 35

Fully illustrated, containing every thing of importance clear up to the present date.

The single chapter on digging ditches, with the illustrations given by Prof. Chamberlain, should alone make the book worth what it costs, to every one who has occasion to lay ten rods or more of tile. There is as much science in digging as in doing almost any thing else ; and by following the plan directed in the book, one man will often do as much as two men without this knowledge.

5 | Tomato Culture 35

In three parts. Part first.—By J. W. Day, of Crystal Springs, Miss., treats of tomato culture in the South, with some remarks by A. I. Root, adapting it to the North. Part second.—By D. Cummins, of Conneaut., O., treats of tomato culture especially for canning-factories. Part third —By A. I. Root, treats of plant-growing for market, and high-pressure gardening in general.

3 | Vegetables under Glass, by H. A. Dreer**...... 20

3 | Vegetables in the Open Air*............................ 20

This is a sort of companion book to the one above. Both books are most fully illustrated, and are exceedingly valuable, especially at the very low price at which they are sold. The author, H. A. Dreer, has a greenhouse of his own that covers one solid acre, and he is pretty well conversant with all the arrangements and plans for protecting stuff from the weather, and afterward handling to the best advantage when the weather will permit out of doors.

3 | Winter Care of Horses and Cattle................ 25

This is friend Terry's second book in regard to farm matters ; but it is so intimately connected with his potato-book that it reads almost like a sequel to it. If you have only a horse or a cow, I think it will pay you to invest in a book. It has 44 pages and 4 cuts.

3 | Wood's Common Objects of the Microscope**.. 47

8 | What to Do and How to be Happy While doing It, by A. I. Root 42

The A. I. Root Co., Medina, O.

Wm. A. Selser, Honey Expert,

Office of the A. I. Root Company.

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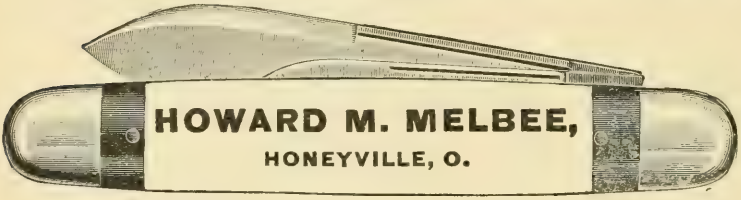
Your Name and Address on One Side---Three Bees on the Other Side.



[This Cut is the Full Size of the Knife.]

Your Name on the Knife.—When ordering be sure to say just what name and address you wish put on the knife.

The Novelty Knife is indeed a novelty. The novelty lies in the handle. It is made beautifully of indestructible celluloid, which is as transparent as glass. Underneath the celluloid, on one side of the handle, is placed the name and residence of the subscriber, and on the other side pictures of a queen, drone, and worker, as shown here.

The Material entering into this celebrated knife is of the very best quality; the blades are hand-forged out of the very finest English razor-steel, and we warrant every blade. The bolsters are made of German silver, and will never rust or corrode. The rivets are hardened German-silver wire; the linings are plate brass; the back springs of Sheffield spring steel, and the finish of the handle as described above. It will last a life-time, with proper usage.

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How Appropriate this knife is for a present! What more lasting memento could a mother give to a son, a wife to a husband, a sister to a brother, or a lady to a gentleman, the knife having the name of the recipient on one side?

How to Get this Valuable Knife. We send it postpaid for $1.25; or will club the Novelty Knife and the Bee Journal for one year, both for $1.90. ☞ Please allow about two weeks for your knife order to be filled.

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GLEANINGS IN BEE CULTURE

A JOURNAL DEVOTED TO BEES AND HONEY AND HOME INTERESTS.

ILLUSTRATED SEMI-MONTHLY

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STRAY STRAWS FROM DR C. C. MILLER

THE EGGS of choice queens form an article of commerce to a considerable extent in Switzerland.—*Bienen-Vater.*

IT SEEMS from the *British Bee Journal* that our British cousins are using tinted glass to measure the color of extracted honey.

THE *Centralblatt* says that on the Lueneburg heath they usually put in one apiary not more than 120 colonies at a distance of at least ½ mile from the nearest apiary. How many localities in this country would stand such crowding?

SWEET CLOVER is a good example of a plant that yields both nectar and pollen, says R. C. Aikin, in *Progressive.* Locality again. I've many a time watched bees at work on sweet clover, to find the color of sweet-clover pollen, without seeing any.

A BRIGHT SUGGESTION comes from F. L. Thompson, in *Progressive.* In order to have outside sections finished promptly, or, rather, to have no outside sections, put two very thin permanent combs, one on each side of the super. Might it not save most of the putting-back of sections to be finished?

THE TIME FOR CLIPPING queens in this locality is as follows: at the spring overhauling, about the last of April, *every queen is seen,* and those with whole wings clipped. About all of these will be superseding queens raised the previous year near the close of the harvest. Through the rest of the season every queen is clipped as soon as she is known to be laying.

ONE REASON why double-tier 24-lb. cases are preferred to single-tier 12-lbs. is that it costs less for one of the former than for two of the latter. Another reason is that the double tiers make a better show. In a pile of single tiers, 55 per cent of the showing surface is honey, and 64 per cent is honey in a pile of double-tiers. You see a single bar in the middle of the double-tier takes the place of two bars, a bottom, and a cover. But I never had the upper sections rest directly on the lower. I finally gave up double tiers because they were odd goods.

C. P. DADANT was received in the most cordial manner across the ocean, according to an editorial in *Revue Internationale,* which speaks of him as "the son of our venerated master, Charles Dadant." We've no reason to be ashamed of our Camille. [Yes, the President of the National Bee-keepers' Association gave C. P. Dadant a great send-off in the form of a letter of credentials from our Association to the International Bee-keepers' Congress at Paris. Through the Dadants the bee-keepers of America have a very close connection with the bee-keepers of France.—ED.]

AFTER READING the footnote to that Straw, about "ragged" hives, p. 870, a certain person said to me, "You tell Ernest that, notwithstanding new hives, we still use rags, and will continue to do so with such hive-covers as we get from Medina." [Now look here, doctor; don't you remember that you were instructed to tear that leaf out so the women-folks would not see it? But, say: suppose you send to us by express two covers plugged up with rags, and I'll send you two new ones in exchange. Is it possible that those some women-folks have been nailing up those covers? I want to see if I can discover the evidences of a woman's hammering, you know, and that is why I ask for the covers.—ED.]

EDITOR HUTCHINSON, asked if he would breed from a hybrid queen whose bees stored four times as much as those of the best Italian, replies, "Certainly I would. Such a colony might be the beginning of a most valuable strain." Right. I'd like to breed from purest and most beautiful stock; but purity and beauty must give way to best performance. [I agree with this with one exception: That a cross between two races will have a decided tendency to sport back toward one or the other parentage, with the result that possibly the very characteristic that we desire to preserve may be lost, and the very one we would repress is brought into prominence. If we can get the desirable qualities in a distinct pure blood of any race, then our chances of perpetuating those qualities will be very much greater.—ED.]

ON GOOD ROADS in a level country, the side shake of a wagon is more than the forward or back jerking, so hives should be loaded with combs pointing to the wheels. I can't say about other places, for I never tried them. [Then from your standpoint the directions that we have sent out for years are incorrect so far as they relate to the manner of loading combs in a wagon. Now, then, let us hear from others. If we can get a consensus of opinion to the effect that combs should be loaded crosswise of the wagon, then we will change our directions.—ED.]

ON ACCOUNT of moving, Editor Hutchinson is going to give up bees. Makes me feel lonesome to think of it, and I wish he'd move somewhere else with more room. [One of the strong features of the *Review* is that its editor has been keeping in close touch with the bees. Even if he does not have any around home, I hope he will still keep an outyard. Some one has remarked that he could always tell by the writings of a man whether he was in the habit of having his fingers daubed with propolis—that he could even *smell* it through the printed page. Whether this is true or not, I have thought that my brother-editor was in the habit of getting his inspiration direct from his bees. I didn't exactly smell any bee-glue on the pages of my *Review* numbers, but somehow they gave the impression that its editor knew from practical experience what he was talking about.—ED.]

REFERRING to the statement that some comb built on foundation is lighter than natural drone comb, Editor Hutchinson says: "It is not entirely a question of quantity of material, but quality also has a bearing. Comb, after it is melted, becomes wax. It is no longer flaky and brittle; but becomes tough and leathery." One of the things I know, W. Z., is that in this locality new comb is not brittle; the newer, the less brittle. I'm so sure you're wrong in that, that it shakes my faith in the rest of your statement. [It has always seemed to me that wax is wax, whether in the comb or cake; and even if there were a difference, methinks a human being, if he were blindfolded, and given a series of samples of natural-built comb filled with honey, and another series of combs built off from the modern extra-thin foundation, also filled, would be unable to detect the difference in the eating. There is considerable variation in natural-built comb, and an equal variation in that built off from foundation. In a lot of samples one might be very much lighter than the other.—ED.]

ENCOURAGING is that answer of Harry Lathrop, p. 872. It does seem that hindering bees from swarming for a series of years has in some way something to do with breaking up the habit. No, Harry, never a bit was I poking fun. When I scent a chance for information about non-swarming, you may always count I'm in dead earnest. [I believe it is a fact that we can breed out to a great extent the swarming propensity in bees. If that be true, let us be sure to incorporate that characteristic in our breeding stock of honey-queens. I do not like to be harping continually against color; but it is morally certain that we can not get all desirable traits in one queen. We must make the choice of the most important, breed for these, and let the less important go; and about the least important of all characteristics is color. We want, first of all, bees that can get the honey; and as a matter of convenience we wish those that will not swarm. Hardiness or good wintering qualities are important. Of the less important characteristics I would mention gentleness of stock, non-propolizing qualities, and, last of all, color.—ED.]

A HARD THING it is to know when to take bees in cellar. Our warm fall weather had a sudden chill, bringing it down to 22° Nov. 8. If now I rushed the bees into the cellar, and then two or three weeks later there came a warm spell, the bees would be the worse for the unnecessary confinement. On the other hand, if no days for flying should come later, as happened one year, and the bees were taken in the last of the month without any flight, the case would be still worse. I decided to take the latter risk, and shall feel somewhat uneasy until a warm day comes—if it comes. I envy you outdoor people.—Nov. 19. Bees flew to-day, and in they go to-morrow. [I used to think that, if I lived in Marengo, I would winter outdoors; but after I had visited you one winter, and experienced your cold bracing air, I came to the conclusion that perhaps outdoor bees would not stand it. There is no use talking; the mode of wintering is or should be dependent on the locality. There was a time when some tried to winter indoors in climates that were too warm; and it is also true that some made an attempt to winter outdoors in localities where it was too cold; but both failed to a very great extent. But now much better results in wintering are secured because locality decides the method that should be used.—ED.]

W. T. STEPHENSON reports, in *Review*, comb 12 years old, and the small size of the cells is plainly perceptible. I think most of my combs are older than that; and the extra thickness of the septum is plainly perceptible, but not the smaller diameter of the cells. Mr. Editor, how does that quarter-century-old comb measure? [Some time ago I received a package of comb without a word of explanation from you, and have been wondering ever since what you sent it for. Now it is all plain. Well, I have just examined it. There are just as many cells to the square inch, of course; but the *bottoms* of the cells have from eight to ten layers of cocoons, while the *sides* of the cells have only one and at most two layers. This would seem to indicate that, when the *diameter* of the cells gets too small, the bees remove the excess of cocoon walls, but leave the bottoms until they get a packing of ten layers. This reduced depth can, of course, be corrected by adding more wax to the *ends* of the cells. Now let's see if this is true. There, I've stopped to measure, and find that the thickness of the comb is from one inch to one and one-sixteenth thick. Thickness of *new* brood-comb is about seven-eighths; and, if so, this 25-year-old comb has been thickened from two to three sixteenths because of the packing of 9 and 10 layers of cocoons in the bottoms of the cells. The other fact seems to be that the diameter of the cells has not been reduced all these years. If this is true with other old combs, then worker bees in a 25-year-old comb will be just as large as in one six months old. This I am inclined to believe correct, because nature would surely make some provision for the excess of wall-linings.—Ed.]

PICKINGS

FROM OUR NEIGHBORS' FIELDS.

BY STENOG.

War's fierce growlings still are heard;
Disarmament's an idle word;
Eastern lands run red with blood
In a never ceasing flood.

◆

World-shaking events in beedom are few and far between. The matter of getting bees with tongues long enough to work on red clover is rapidly coming to the front and receiving the attention it deserves. The fact that the bees and the clover already meet in a few instances is enough to make all feel sanguine that the desired end is at the door. Judging from analogy in other cases, it is not too much to say that the benefit of such a strain of bees would not be so great to the bee-keeper as to the farmer, as the more perfect fertilization of the red clover might render it so much more productive that the additional increase in clover would more than equal the gain in honey. No stone should be left unturned in achieving this result, which certainly has no reason against it, but so much in its favor.

◆

THE AGRICULTURAL GAZETTE.

This journal, published in New South Wales, comes to this office regularly, and it is a welcome visitor. It is edited by W. H. Clarke, under the direction of the Secretary for Mines and Agriculture. It is devoted to every branch of industry relating to the earth, one of the most important being that of apiculture, under the direction of Mr. Albert Gale. Some of the more interesting topics are: Raising ostriches in Egypt; the Jersey cow; lemon culture in Italy; wheat and potato culture, and a hundred others. Americans themselves would be surprised to see what is going on in our own country. For instance, in speaking of seedless oranges we learn that "the industry has grown till no one thinks of planting seedling oranges, and tens of thousands of seedling trees have been budded into navel orange-trees which have yielded net profits of from $250 to $300 an acre.

"Riverside, Cal., has grown, in twenty years, from a hamlet of less than 30 American inhabitants to a town of 14,000. The average annual shipments of oranges from Riverside are 1,600,000 boxes." This all came from two unpromising trees brought from South America less than 30 years ago. The people of Riverside are urging that the two trees which were the source of this prosperity be removed to a public park, in order that they be kept for the next generation as an object-lesson. No visitor is allowed to take any flower or fruit into the orchards for fear of the scale. Riverside is the greatest orange-producing locality in the world, 16,000 acres of land being devoted to it. What a paradise for the bee-keeper! Perhaps the editor will give us some personal notes from these great orchards next spring.

◆

BEE-KEEPERS' REVIEW.

Mr. Hutchinson's journal is always uniformly good. It never falls below the line of what might be called a little extra. The issue for October starts out with an editorial article on wintering in clamps, nicely illustrated. The hives are buried till the tops are just even with the ground, on a hillside or a gentle slope. The hives rest on rails. They are then covered with straw and other rubbish, then with rails, and finally with earth and old vines and straw. Perhaps friend Hutchinson will lend us that cut—hope so. The photos were made by himself, and in photography he is away up, as is well known. Relative to these clamps, the editor says:

> I don't remember where I first got the idea, but I do remember having some correspondence on the subject with Mr. C. J. Robinson, of Richford, N. Y. He very persistently urged me to give no ventilation. He asserted that the bees would winter better with no ventilation—that the hibernation would be more perfect than in a "sea of oxygen." I was very loath to take this advice; and it was with many misgivings that I finally ventured to risk six colonies with no ventilation except that which would come through the earth. At the same time I buried a dozen other colonies, giving them ventilation by means of a four-inch tube laid along the bottom of the trench, and extending out into the outer air. There was also a similar tube at the top, extending from the bottom of the pit up through the earth some three or four feet. I remember that I had a thermometer hung, by means of a string, in this upper tube, and that I often climbed up and drew up the thermometer to learn the temperature. The outside temperature had very little effect upon that inside the pit. When the mercury stood at zero in the open air, the thermometer drawn up from the clamp showed 43°. It did not vary three degrees from this in all winter. The bees wintered perfectly in both clamps. It seemed as though they were just about the same as when set in the previous fall. The straw around them, and the hives and combs, were dry and clean, and free from mold.

◆

Relative to introducing queens with absolute safety, that veteran in the business, M. M. Baldridge, of Illinois, says:

> The only safe way I have tried is to give the queen to hatching brood, the same as you advise; but I place the same in a top story over the brood-nest, with a fine wire screen between. This keeps all robber bees and the bees of the bottom story away from the queen, and insures the requisite heat for both the queen and

the hatching bees. Any time inside of a week, and when there are plenty of bees in the top story to protect the queen, I remove the wire screen and let the bees in the bottom story have access to the queen. Of course, the queen in the bottom story has been previously removed and all queen-cells destroyed. A day or so later the brood in both stories can be consolidated in one story, if so desired.

Writing on the same subject, Mr. B. F. Jones, of Idaho, says:

> After the queen arrives I at once examine the queenless colony that is to receive her, destroying all queen-cells that are started. If a queen is to be removed, it is done in the morning of the day when her successor is to be introduced. If nuclei are to be formed, it is also done during the forenoon, and the queen in either case is to be given at dusk when the bees are all in. When evening approaches, if it is cool I begin earlier; if warmer, and the bees late returning, I delay somewhat.
>
> For smoker fuel I use white-cedar bark; although any kind can be used. I also use, as a starter, a piece of burlap, or old cotton rag, impregnated with saltpeter by soaking in a solution of saltpeter and drying. When nicely started, a teaspoonful of any granulated smoking tobacco is dropped in. I first give the queen a puff, then puff smoke at the entrance of the hive sufficient to drive the smoke to every part of the hive. After one minute I raise the cover carefully, following it with sufficient smoke to reach every bee and drive them back. Then I pry off one end of the wire cloth of the shipping-cage, and allow the queen to run down between the combs, following her with a puff of smoke, drop the quilt, and close up the hive. Never dequeen or form nuclei in advance of receiving a queen, for she may never come, or may arrive dead. See that smoke reaches *every bee*, as well as the queen; and allow the queen time to quiet down.

◆

Mr. J. D. Bixby reports moving 46 colonies of bees from Iowa to Saratoga Co., N. Y., a distance of 1100 miles. The trip occupied 4½ days. The bees were mostly in eight-frame Dovetailed hives. All the colonies went through alive and in good condition but one. The consumption of stores during the trip was large. The loss in bees was heavy, most colonies having from a pint to two quarts dead on the bottom-board. Not one wired Hoffman frame was broken or damaged during the trip.

◆

Mr. Hutchinson will receive the sympathy of all on account of the loss of his father, who died recently in Tuscola Co., Mich., at the age of 82. Few better things can be said of a man than what W. Z. says of his father in the following: "Every animal on the farm was a pet, and had a pet name." Once the old family cow wandered into the woods so far she did not return till the next day. The old gentleman went into the house and spread a big slice of bread with butter, sprinkled on a thick layer of sugar, and fed it to the cow when he found her. Editor Hutchinson has been building a new house; and moving into this, together with attendance at his father's funeral, delayed the October issue of the *Review* nearly a month.

◆

SOUTHLAND QUEEN.

The editor says:

> We notice that John E. Bradley, of Augres, Michigan, is held up as a fraud in GLEANINGS. This same man has bought queens of us, and will not pay. We wrote the postmaster of Augres, who gave us information that Mr. Bradley was not reliable, and advised us to get our money first. Mr. Bradley orders the best breeding queens. As he never intends to pay he gets the best and leaves the queen-breeder to mourn. We are in hopes he will get no more queens that way.

◆

Concerning that after-swarm at the home of our old friend W. H. Laws, the editor waxes mirthful in the following manner:

> There was a swarm on election day at Round Rock, Texas. It was an after-swarm, but just as good, so far as we know, as any of those before it. It was a sweet little queen—a baby girl.

Ridge-Pole
Musings.

SELLING CANDIED HONEY.

Low Prices, and the Cause; Supply, Demand, and Conditions Govern; Fowls' Prices.

BY R. C. AIKIN.

Some people can not bear to have anybody else do things other than as they think is the way, so it comes about that this owlish fellow on the ridgepole has stirred the fighting propensities of a certain Fowl on a lower round of the ladder. It has always been my ambition to try to stand at least the equal, so far as was possible, of any other fellow, and, if possible, to excel; but here I am, treed by that fighting male member of the Fowls family away down in Oberlin, Ohio. I am glad of one thing—he is too clumsy to climb up to my high perch, so I am going to crow (hoot) away at him just as much as I please.

I suppose if I were away down in Ohio I might do as the Ohio Fowls do; but since I have climbed up (I am a Buckeye too) where I can see over the stumps and have a clear view through the clean pure air of this upper stratum, I shall make the feathers of the other tribes stand upright with my hootings.

Now, friend F., since I am up out of danger I will forgive you for your efforts to flop me down and dig your talons into my flesh because of this matter of selling candied honey. Just smooth down your feathers and listen. I won't steal away all your prices and trade. I shall show you that I am indeed your friend. You have been looking up through the misty moonlight, and, seeing that peaceable little owl, you got scared. If the owl and I can be at peace in such close proximity, surely you need not fear me at the distance you occupy.

Some months ago I received a letter from a New Yorker, and in it was a passage *somewhat* like this: That so prominent a bee-keeper as I, selling honey at 6 cents a pound, would do more harm than all the adulterators in the whole country. Well, had I not been used to being accused of things of which I was not guilty, and of receiving sharp thrusts, I should, no doubt, have had my feathers ruffled at least a little; but as it was I went marching round, hooting as before.

It seems that friend Fowls is making a molehill into a mountain, and that the said New Yorker is unduly alarmed. It is true I have sold a good many tons of candied honey right to consumers, they to melt it if they wish it liquid, and that I have also sold much honey at 6 cents per pound.

It is said that the city of Denver consumes more honey per capita than any other city in the United States; and while it is only 46 miles by wagon and 56 by rail, I seldom sell any honey there. There is an immense production of honey about Denver and tributary country; and when there is a fair to good crop we must export more or less. When I came to Loveland, ten years ago, it was a village of about 1000 population. I believe there were not 10 people in the village worth $10,000, and very few worth even $1000. Why, my dear Mr. Fowls, if the store-keeper had offered the citizens a syrup in some fancy glass that cost the consumer as much for the package as for the syrup, such dealer would have been thought crazy.

Now let me tell you that every grocery in my little home town has honey for sale, and they sell, too, and Denver is in much the same fix. There is another fact I want you to *repeat over and over* until it is *fixed* in your mind to *stay*. It is this: Granulated sugar is also in every store in all our towns, and so are glucose mixtures in some form in most of them and many have sorghum and other syrups. These are staple sweets, and they are the sweet consumed by the masses; and if you stop to think, you know why; but since you do not seem to get the idea I will tell you.

There is all over our land a vast population who never taste honey, and a great number who never even see it once in a year — very many *never* see it. The production is limited, altogether too limited to supply all the people. Then the price (not mine) is *strictly prohibitive* to the common people — common financially. Mr. Fowls and that New York man (I do not name the New Yorker, because he has not come out publicly, and when I asked him to give me some figures for publication he never replied) know very well the common people *can not afford* to buy honey at fancy prices, and *will not* buy much when they can get sugar much cheaper.

FOWLS GOLDEN HONEY CHARIOT

AIKIN AFTER FOWLS

The great mass of the people are of the "common herd" so far as finances are concerned—unable to spend money freely. These people buy sugar and other cheap sweets, of necessity. They *are willing* to buy my honey — yes, they are *more* than willing; they *much desire* it.

I said I had sold much honey at 6 cents a pound, and here is how it was done: If my customers came with their vessels to get the honey they paid me 24 cents for 4 pounds. If I furnished them a 3-pound lard-pail they also paid 6 cents more for the pail — 30 cents for 4 pounds of honey. Do you not see that my customer's honey cost him 7½, and at the same time he could buy sugar at 6 and less, and package thrown in? and a little water with the sugar makes a *fine syrup*. The question is a simple one. There is not in my town, and adjacent territory within 15 miles, enough people to regularly consume honey as a staple sweet at fancy or luxury prices, to provide a market for ¼ the product in said territory. My town has a total population of about 2000. If each man, woman, and child in the place would consume 10 pounds of honey annually, I could sell only 20,000 pounds if I got the entire trade. My own crop alone would make at least 15 pounds per capita, and there must have been from 10 to 15 pounds more produced by others. What shall we do?

OBERLIN
GOLD TAPE HONEY PARLORS
FOWL
PURE GILT-EDGE HONEY
PAT— If Oi had the dimes like the ould duffer there now, me Molly could have a taste of the sweet stuff!

THE FANCY ARTICLE.

While I sold at 6 cents a pound for the naked honey, *I got 6 cents a pound for it*. Do you comprehend that, Mr. Fowls, and Mr. New Yorker? The A. I. Root Co. catalog for 1900 quotes Muth 1-pound jars at just a trifle less than 4 cents each. I do not know the weight of them, but I do know that if I got them here at a cost of ½ cent each for freights and drayage I should do well. Thus they would cost me 4½ cents each. Six cents for my honey and 4½ for the glass makes 10½ cents. Put to this another cent and a half for freights to Oberlin, brother Fowls, and the honey costs at your depot on track 12 cents a pound, or twice the cost of granulated sugar laid down at same place.

We will assume that Mr. Fowls has bought a carload of my fine honey to splice out his short crop. He must have something for his trouble and risk, so he adds a cent a pound and puts the honey into the groceries. The grocer must add about two cents apiece more on each jar, thus the honey costs the consumer 15 cents. This honey, mind you, is in no way inferior to Mr. Fowls' extra-fine superior double gilt-edge Oberlin product. Say, Fowls, how many carloads will you purchase outright annually, spot cash on track at Oberlin, you to put up a forfeit of $500 in case of a failure on your part, and I lay down the honey there at 12 cents a pound in 1-pound glass jars? Don't forget I want *6 cents a pound* for the *naked honey*, you to do all the liquefying and exchanging with the retailer?

I will tell you what I will do, Mr. Fowls. I have several thousand pounds of fine extracted in 4, 7, and 14 pound sizes (the regular 3, 5, and 10 pound lard-pails), and all candied solid. If you will pay me 7 cents a pound for this honey, and the *cost* of the pails, you to pay the freight, then the honey shall be yours, and you may make all you please out of it. If I am to be accused of selling too low you may have a chance to buy my honey and get it out of the way where it will not utterly ruin the market. Terms are that you deposit the money in the hands of The A. I. Root Co., then as soon as your agent releases the honey to you at Oberlin, and it is properly checked out, they remit to me. This year I am retailing *honey* at *7 cents*.

I want every bee-keeper who reads this to know that, when I was retailing candied honey (or liquid) at 6 cents, the best I could do in Chicago or other principal markets was 6 cents. The freight to Chicago is 97 cents (which means on net honey over a cent) in less carlots; Oberlin, Ohio, where big prices prevail, still more of course. The packages, if 5-gallon cans, were ¾ cent: thus if I sold at what it was *possible* for me to get away from home I got but 4¼ cents for my honey. That pesky stingy Fowls never once whispered to me that he could get me 25 cents for that honey in Oberlin. Just think of it! I could have packed that honey in 1 pound jars at 4½ cents each, paid 2 cents a jar freight to Oberlin, making 6½ cents, given Mr. Fowls 5 cents commission, and his retailer 3½ cents, then still have 10 cents for my honey, when in Chicago it would bring me but 4¼. That shows the good will and brotherly feeling Mr. Fowls has for a fellow-producer. He tries to make us believe it will sell at 25 cents a pound. See page 305. I want you, dear reader, to note that *not one* of those who are criticising me for selling my honey at 6 cents would purchase it at that price, nor show me where or how I could get that out of it. I only wish it were possible for me to get that much year by year. I now get 7 cents for bare honey, and I will venture that Mr. Fowls can not do one whit better on an equal quantity per capita in his boasted high-rate town.

Those people who get such good prices are selling to the few who can and do buy luxuries; and so long as their production does not exceed the consumption of those few at fancy prices they are all right, and I have no kick. I suppose they would be shocked to hear that here raspberries are sometimes sold at less than $1.00 per crate of 24 pints, while in other places they would bring two or three times that. Or in corn countries, where it is impossible for the people to consume it all, they sell at 10 to 20 cents a bushel, while here we pay two or three times that. Again, less than 500 miles from Mr. Fowls' home, I have heard of peaches selling at 15 cents a bushel; but here we seldom get them for less than $1.00 a peck.

Brethren, if some of us sell honey too cheaply, just buy us out. We should be glad to sell you some to supply your fancy trade, and we will take ordinary prices too. Oh, yes! just bring your bees and come. Flour and honey are cheap here, and freight rates to Ohio are not much more than "the traffic will bear." Look out, Mr. Fowls, you better get your honey sold at fancy prices quick before I get there with a few cars of western stock; because, when I get to selling fine candied honey in 4, 7, and 14 pound pails there, and everybody buys, your *glass* trade will be done. I think I'd better take your advice, and put up my prices here to 15 or 20 cents. That will shut off all but my half dozen or so wealthy customers. Then I am coming with my crop to *share your excellent trade*. Come to think about it, I forgot to say that wealthy people do not buy very much honey—just a little of honey, fruits, meats, nuts, and other luxuries. Come, brother Fowls, let's do a little business.

Loveland, Colo.

[Mr. Fowls will soon have an article, or articles, on bottling extracted honey, and how he gets higher prices for his honey. In one of these he will doubtless "pay his respects" to the Ridgepole (F)owl. My! won't the feathers fly?—Ed.]

EXPERIMENTS IN INTRODUCING QUEENS.

BY ARTHUR C. MILLER.

"'Tis an ill wind that blows nobody good;" and, old as the adage is, it is as applicable today as ever; and the past season, while giving almost no honey, has offered most excellent opportunities for various experiments. Those of us who made the most of these opportunities have gotten at least some good from the ill wind.

I devoted much of the season to experiments in introducing queens; and while I do not consider the results as in any wise conclusive, they were at least interesting, and may be of value to others.

To begin with, I wish to emphasize the fact that, during most of the time covered by the experiments, there was no honey being gathered. Also, some of the queens were received by mail from greater or lesser distances; the rest I reared. For convenience of ready comparison I will give each method and its results together.

1. Queens liberated from shipping-cage by bees eating away candy.
    (*a*) Colony having all brood taken away. Queen was received, but it was two weeks before she began to lay.
    (*b*) Colony with brood; queenless but 24 hours. Queen killed. Two cases.
    (*c*) Colony with brood, but queenless 3 days. Queen received. Two cases.

2. Queen caged on hatching brood. Two killed, one received.

3. (*a*) Queen on own comb, among her own bees, put into colony just unqueened. Killed
   (*b*) Same, but colony aware of queenlessness. Killed. Five or six killed thus. I tried tobacco smoke in some cases, but could see no difference.
   (*c*) Queen given same way to populous 3-frame nucleus containing laying workers. Queen received all right.

4. Queens run in under mat at night. Killed. Two cases.

5. Simmins' "fasting method," i. e., queen alone in small box or cage, and without food for 30 minutes; kept warm meanwhile, and then made to run in under mat, preceded and followed by a puff or two of smoke. A lot of trials and no failures.

In this last method I used tobacco smoke—the tobacco being put in on top of the planer-chips after they were burning freely. How much of the success was due to the tobacco smoke I can not say, but I believe it had very little to do with it.

The Simmins method is certainly easy and simple, and, in spite of adverse honey conditions, was uniformly successful.

Such were the experiments. Interpret them according to your own experiences.

Providence, R. I., Oct. 22.

[The result of No. 2 is a little unusual. The result in No. 3, *a* and *b*, is what I should have expected. Queens introduced by this plan in 4 are very often received kindly. We once introduced some 25 or 30 at night in this way, and all were received; but every colony was surely queenless, for we had taken the queens out a day or two before. A colony longer queenless, or queenless long enough to get some of their own cells started, is more likely to reject a queen than when it has been queenless a few hours—or at least that has been our experience. I do not see how No. 5 differs very much from 4—that is, I do not understand how fasting for only 30 minutes on the part of the queen should induce a friendly behavior on the part of the bees. I should be more inclined to believe that the favorable result was owing to the tobacco smoke.—ED.]

BEE-KEEPING IN THE SOUTH.

From 39 to 62, and 2200 lbs. of Honey.

BY L. W. M'RAE.

In this picture are mostly eight-frame hives. They are now in winter quarters, so you see how we are blest in climate. I started in the spring with 39 colonies; increased to 62. I have now doubled back to 57. I have taken off 720 lbs. of extracted, 1472 well-filled sections, and plenty of stores for winter.

AN APIARY IN ALABAMA.

Bee-keeping with improved hives is a new industry in this part of Alabama. I was one of the few who were cranky enough to invest in it, four years ago; and, being afraid of my own works, I went slow until now I am satisfied it can be made a paying industry.

I find another trouble is to get our people educated up to paying fancy prices for fancy honey; they have been so long paying 10 cents for chunk honey, young bees, and pollen, mixed, as cut from the box hive, that 12½ cents is the best I could do this year for sections; 8½ for extracted.

I am now trying Belgian hares on a small scale, although one of my fruit-journals says a man should be prosecuted criminally who would bring them into a State.

In the picture is my wife, a neighbor's boy, and myself.

Calvert, Ala.

BARRELS VS. TIN CANS FOR HONEY.

A Strong Plea in Favor of Tin Cans.

BY ELIAS FOX.

Friend Root: — I can truly indorse all that was said in favor of tin cans as against barrels for the shipment of honey, at the Chicago convention, as per your issue for Oct. 15. I have had quite a little experience along this line myself, and have decided never to use a wooden package for extracted honey again. I began putting it up in wooden packages with wooden hoops; and I found by letting them stand a short time the hoops would loosen up, and, unless watched very closely, and hoops tightened, there would soon be a leak, no matter how good the cooperage; and, even in shipping, the hoops would loosen. Then I had my cooper use iron hoops, and my experience was the same, by letting the packages stand for any length of time, notwithstanding we selected the choicest and most thoroughly seasoned staves, and the cooperage was perfect; and the packages were made up a year before using, and kept in a dry place, and hoops retightened, and filled dry. If there was a piece of heading a little cross-grained the honey would ooze through the pores and even through the end of the staves, and almost invisible knots, no larger than a pinhead. Of course, so far as the loss was concerned from leaking, it was nominal. But if you count the amount of honey absorbed by the wood, and the leakage together, it would equal if not overbalance the difference in the cost of the two packages. Then, again, think of the nasty sticky packages to handle, and hands and clothes daubed with it; and when barrels are in this condition, and rolled along, as advocated, dust and dirt will stick to the leaking spots and make an unsightly package, aside from smearing depot platforms and car-floors, to attract bees, flies, etc.

The barrel side of the debate say if a case is dropped, the solder will loosen and a leak would result, and that the cans are too unwieldy and too heavy to handle. A man should not be so awkward as to drop a package. But suppose he is, and the package should be a barrel. About the time you had it up to the wagon-box, and the head should burst out, which would leak the worse? As to the cans being a little too heavy, I would say they are; yet I have moved, alone, 5000 lbs. in two-can cases in a day; had ten rods to carry it to the wagon, two miles to haul it, and piled it up five cases high, and my consolation paid me for the extra work in *knowing* there was not a drop of leakage, and no hoops to loosen while I slept.

We can not be *too* neat in handling and marketing extracted honey. So I say, give me new 60-lb. cans, and I will guarantee my honey to reach *any* market in such a condition that I shall not be ashamed of it, and no loss from leakage or absorbing. If we want a *cheaper* package for dark honey, there are plenty of second-hand cans and cases to be bought as cheaply as barrels.

Hillsboro, Wis.

[It is very important to have a good grade of square tin cans. Last season there were some on the market of a cheaper quality, and some trouble was experienced from such cans breaking or leaking.

The boxes holding two cans ought to have the hand-holes about half-way down. This raises the bottom of the box above the knees while it is being lifted and carried, so that the burden does not interfere with walking. The trouble heretofore has been that the hand-holes were made only half or two thirds through the wood, and were near the top of the box.

We will use our influence to have all canmakers have the hand-holes changed to the center of the ends; and such holes should go clear through the wood. So made the boxes can be handled without bumping the knees in walking.

From our own experience we are satisfied that the market will soon insist that the light grades of extracted honey shall be shipped in cans. All that is used for manufacturing purposes, of a darker or poorer quality, will probably always be sent in barrels.—Ed.]

BARRELS VS. SQUARE CANS FOR HONEY.

On page 812 it is said it was admitted that barrels were slightly cheaper than the cans. Possibly location may cut some figure as to cost. Let us see. We here in Florida can buy a well-finished barrel, guaranteed against leakage. The cost of such a barrel will be less than $1.25, delivered at the apiary. It takes, say, 6 cans to hold as much as the barral does, and we will say the cans cost 40 cts. each. Then the cost of cans to hold 30 gallons of honey would be $2.40 as against $1.25 for the barrel The freight on empty cans is more than it is on empty barrels, and the cost of shipping them filled is 95 cents for honey in barrels, against $1.18 in square tin cans. Now, then, it is plain that barrels are much cheaper for us, as we can get no more for our honey in cans than we can in barrels. As for leakage of barrels, it all depends. If your barrels are thoroughly coopered and waxed inside, there will be no leakage; if they are not, there is trouble ahead. Barrels will be used in this part of the world until we can use cans at the same cost. We may jam our fingers with barrels, and we see no good reason why we could not pinch them if we used cans. M. W. Shepherd.

Mannville, Florida, Oct. 22.

[While a great deal of Florida honey is fit for table use, much of it is used for manufacturing. It is generally conceded that, for the latter purpose, honey should be put in barrels. There is no chance for argument here, except, perhaps, in localities where wooden packages can not be used owing to the dryness of the climate. Then, of course, tin must be used for all grades.

You say you can get no more for honey in cans. Are you sure about that? This morning we received an order from a large buyer for 2000 lbs. of extracted table honey. He specified that if it was put in cans he would pay half a cent extra. Again, we bought a carload of honey in barrels, from W. J. Pickard, of Wisconsin, who, it will be remembered, at the Chicago convention championed barrels as against cans. Well, when we came to sell that *same* honey, the man to whom we sold said he would have paid *one-fourth of a cent more if it had been put in cans*, and the Pickards know how to barrel honey if any one does. Mr. Pickard offered the honey to us in barrels. If he had offered it in *cans* we could have paid him extra. The trouble is, you barrel fellows haven't yet found out that some markets will pay extra for honey in cans. It is our present practice in the case of nearly all table extracted honeys to pay half a cent extra in small lots when put in cans; but the fact that we pay the extra half-cent may not always show in the quotation. For instance, John Jones writes that he has 2000 lbs. of clover honey in barrels. We make a price direct; but if Mr. Jones says he has 1000 lbs. in barrels and 1000 in cans, the quotation may show half a cent more for the latter than for the former, depending on the producer, and the market at the time. We do not claim this has been our universal practice for several years back; but we have discovered the great convenience, as well as the saving in loss, by having the honey in cans, so that we are now willing to pay a difference. Well, now, the next time you secure a crop of honey, put part of it in barrels and part of it in cans; and if it can be used on the table — tupelo and mangrove, say — just note the difference in the quotation.

By your way of figuring, the barrels will be cheaper. But let us figure again. Suppose you have half a cent extra for the honey in cans. The saving in cost of receptacles and the saving in freight would make a difference in favor of the barrels of $1.48 on 30 gallons of honey. This 30 gallons would, by the ordinary figuring, amount to 360 lbs. This, at half a cent a pound, would make $1.80, or a difference of 32 cts. in favor of the cans in actual saving.

We do not know what is the practice of the large buyers in Chicago in reference to honey in cans and that in barrels; neither do we know what the price is in the New York markets; but we are firmly convinced that the trade will in time, for all table honeys, offer half a cent extra, or enough difference to get tin cans used everywhere. Now, let it be distinctly understood that all dark honey should probably always be shipped in barrels and kegs.

I do not say that we *always* pay half a cent difference between the two packages. A good deal will depend on the condition of the market; whether the honey is to be sold out in large lots or in small lots; and whether the man who raises the honey has the reputation of getting good barrels, and knows how to cooper honey in them so that they will not leak; but there are very few who know how to put up honey in barrels so they will go through to destination in good order.

Now, why do manufacturers, bakers, and tobacconists, prefer barrels? Simply because they do not want to fuss with little packages. The honey is run from barrels into large vats, and the barrels are handled by means of cranes.—Ed.]

* * *

CUBA AFTER THE WAR; ITS RESOURCES, ITS MOSQUITOES, AND ITS CLIMATE.

Some Words of Advice to those who Expect to Go into Bee-keeping on the Island.

BY H. G. OSBURN.

After the lapse of four years, September, 1900, finds me once more on Cuban soil. But what a sight meets the eye of the visitor if he takes a ride in the country as I did a few days after my return! Charred and crumbling ruins on every hand bear silent testimony of the awful ravages of war. That this fertile island, so lavishly endowed with nature's wealth, should have been chosen by fate to be the slaughter-ground of tens of thousands of her brave sons between 1492 and 1900 seems indeed an undeserved fate.

That the nineteenth century will mark the dawn of an era of prosperity and freedom for a young and deserving generation, there can be no doubt. The soil over which has run so much blood, which three different armies have fought for, holds in its embrace vast wealth awaiting the advance of modern civilization. Although we are only 90 miles from the nearest point on the Florida coast, still in that distance great changes have taken place. We find a different climate and a far different people; a country that is very rich, and a climate that is comparatively mild, with the exception of about three months in midsummer, when one would almost wish he were in Greenland, in hopes that the change would do him good. But we can not have climate and conditions made to order, and so I will venture to say that any man with a little money, and lots of push and perseverance, willing to put up with a hot damp climate, and who is not afraid of flea-bites or sticky mud, can, I think, make a good living here now, as the price of every thing is high, and there is an unlimited demand for every thing raised here at the present time.

The bee-keeping industry, so far as I can find in the short time I have been back, is advancing quite rapidly. Several parties of northern capitalists have come here and started in the business on a large scale, knowing absolutely nothing about the climate or the difficulties to be overcome, some not even knowing a worker from a queen, but fully aware of the fact that flowers produce honey, and that bees gather honey; and also, having read or heard some one say that flowers grow profusely here, they thought by bringing a few thousand hives here, or buying them here, they can set them down anywhere, and the bees will go to work and fill the hives with wealth, and all the owners have to do is to gather it and sell it. But one or two summers, when the moon gets just right for the moth to have its summer appetite, and the fast-spreading foul brood commences at the other end of his apiary, he will wish he were a boy again unless he knows just what to do and how to do it.

The advisability of first coming here to visit those of us who have large apiaries, offering a fair price for information that has taken us years to acquire; inquiring into and studying the conditions that go to make up a successful year or crop; acquainting oneself first with the most successful hive in use here, together with the other fixtures that go to make up a large apiary; the best strain of bees for a winter honey-flow, and many other important hints that they might pick up, which would be of vast importance to a beginner here, all of this had never been taken into consideration until it was too late. After one has spent thousands of dollars, and brought here carloads of fixtures which may be all right at home but not in Cuba, the sad truth dawns at last, and the new comer becomes fully aware of the fact that he has made a bad mistake. He returns home and paints a dark picture of bee-keeping in Cuba among his friends, saying, "I have made a miserable failure of it, lost all I put into it, and am thoroughly disgusted and discouraged. If you will profit by my sad experience you will stay where you are. It is unmercifully hot; the fleas will eat you alive; it rains every day, and the ground is so sticky you can't step out of the house without sticking fast. Take my advice, and stay at home and leave well enough alone." That is about the way their story runs.

Well, take my advice too—one who has lived here 12 years—and stay at home unless you first come here and find out which is the best, what are the difficulties to be battled with, how to best fight them, whether or not you like the climate, and the insects which find the rich red blood of the new comer, the very best stimulant for a good appetite. When I hear of these big places starting up under perfectly green management with a liberal sprinkling of foul brood as a side dish, I merely shake my head and feel the deepest sympathy for them, for my long experience here has taught me only too well what the ultimate result will be in nine cases out of ten. Remember, one hundred dollars may save you several thousand; that a reaction will come before long is certain; then we shall see who are the successful ones.

The surplus season is now at hand, and the bees are in the best condition I ever saw them at this time. They are fully two weeks ahead of what they used to be here on this range before the war. I shall commence extracting on Monday, October 15, ten days earlier than we ever commenced here, and that was the year we took 73,000 lbs. from 600 hives in five months.

Punta Brava de Guatao, Cuba, Oct. 10.

[Mr. H. G. Osburn is a son of the late A. W. Osburn, who for some years conducted an extensive bee-ranch in Cuba. The senior Osburn is the only one who ever operated a steam honey-extractor, the diameter of the reel of which was something like 8 feet. It was with this mammoth machine that he took, if I am correct, 73,000 lbs. in 5 months. The junior Osburn worked with his father during this time, and is not without some knowledge and experience concerning the resources of the island. His advice to make a preliminary trip before migrating to that unknown land with its unknown difficulties is good. No one should ever think of "pulling up stakes," taking his all, and chancing every thing in a move to a new locality, much less go to a climate that is essentially different from the one in which he has been brought up. I am planning to make a trip into Cuba in February, to see and know for myself some of the peculiar conditions. I'll give due announcement of the time I shall arrive, and where.—Ed.]

HIVING SWARMS BACK IN THE HIVE FROM WHICH THEY CAME.

Bleaching Comb Honey a Success.

BY MRS. D. A. HIGGINS.

Upon reading an article of Mr. Doolittle's about this matter I thought it might be well for me to give my experience in this line. About four years ago we were having quite a good honey harvest, and about the first of June my bees took the swarming fever, leaving, as Mr. Doolittle says, many boxes of honey partly finished. At first I was at a loss to know what to do, as I was quite a new beginner in business. At last I resolved to try the plan of returning the swarm to the same colony whence it came; and as soon as a swarm would come out I would go to the hive that it came from, remove all the queen-cells, take out two or three cards of honey from the brood-chamber, and place foundation-frames in the place of them. This seemed to satisfy the bees perfectly. They would soon draw out the foundation; and in being allowed to make new comb they seemed to have no inclination to swarm again. I returned several swarms in this way, and none of them ever came out the second time. I now fear no trouble in being able to get along without loss of time in case of swarming. The bees seem to work better after than before swarming. These cards of honey taken from the hive to make room for the foundation can be placed in some weak colony, or thrown out in the extractor.

I live where the bleaching process for comb honey is adopted, and think it a great success.

Bonsall, Cal., Oct. 27.

[The plan you describe is all right, and a modification of it is practiced generally by the most progressive bee-keepers. It is the rule, however, to hive the swarm on the old stand on foundation only, giving no combs or brood. This, with what is left of the parent colony, together with the old hive, are put in another location.

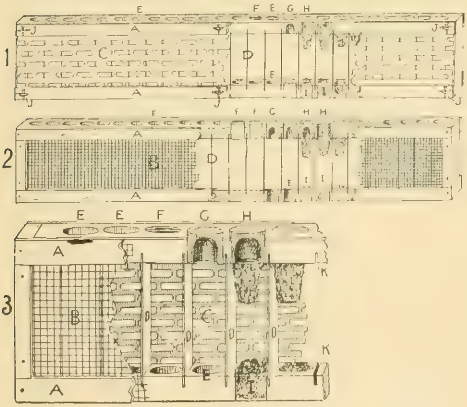
I am pleased to know about the bleaching. If you can give us any further information than what has already been printed I should appreciate it much.—Ed.]

QUEENS BY THE PECK.

Swarthmore's New Queen-cell Hatchery; a New and Simple Method of Making Queen-cups; How to Keep a Plurality of Queens in One Hive over Winter.

BY SWARTHMORE.

Mr. Root:—I am sending you by post a queen-nursery cage that I have used with wonderful success the past season. You will notice that it is of peculiar construction, almost entirely separable; that is, the tins are easily slid in or out of the saw cuts, and the top-bar is removable and divisible. I have charged this sample cage with wax ready for cell-starting, thus: Each hole in the top-bar is filled with melted wax, and allowed to cool hard. The surplus wax is then shaved flush with the wire, and the top-bars are then laid aside, ready for use. When wanted for cell-starting, simply place a top-bar in the sun for a few minutes, until the wax becomes pliable; then press the cup-forming stick into the center of each plug of wax, and you have very quickly prepared 25 cups for cell-starting—no fire, no machinery, all simple and rapid handwork. By first putting the forming-stick into the mouth, and then pressing it into the pliable wax, and giving it a rapid twist between the thumb and fore finger, you will secure that smooth surface so important. The Doolittleites may now transfer larvæ, or the Pridgenites may push in a cradle and all, or the Alleyites may attach strips of comb to the top-bar of this nursery. It seems to me that it fills the bill for all hands. When the top-bars are prepared, by whatever method one likes, they are fitted into a frame and given to the bees until worked out.



SWARTHMORE QUEEN-CELL HATCHERY.

A—Strips.
B—Wire screen.
C—Perforated zinc.
D—Division tins.
E—Holes.
F—Holes with solid wax.
G—Wax-plugs pressed in cup form.
H—Queen-cell built from wax-pressed cup.
I — Sponges saturated with sweet.
J —Staples on zinc side to fasten strips A.
K—Saw grooves to hold division tins.

1. View of zinc side.
2. View of wire side.
3. Enlarged view.

Just before capping, or as soon as the cells are pinched, or as one prefers, remove the top bars to the honey-house or queen-house, and slip them into the cage part; then slide the dividing tins into their places; then put on the zincs if the cells are to hatch with queenless bees, or the screens if they are to be put into an upper story. If given to queenless bees no food will be necessary, as the bees will enter each compartment and care for the young queens just as well as though they were upon the combs. If put into an upper story to hatch out, simply saturate the sponges with honey. These sponges also act as plugs, which are easily removed to allow queens to run up into cages for introduction or shipping. By removing the wax plugs, hatching cells may be pushed into each hole in the old way if the apiarist prefers that plan.

The numerous possibilities of this cage can not all be covered in one letter at one sitting, for the reason that I can not think of them all in so short a time. I have tried all methods of cell-starting with these cages. They all work; but I prefer to cut bits of one cell each, and peg them into holes made by pressing the pointed end of a leadpencil into wax plugs.

Two years ago I succeeded in wintering four laying queens to the colony in a crude construction of this cage, and last year I wintered six to the hive. Now I shall undertake to winter 75 to the colony. Three of these nursery-cages fit nicely into an empty frame, and each nursery will hold 25 queens; and by placing the frameful of queens in the center of a powerful colony I have every reason to believe that 95 per cent of them will come through alive and well. This brings the Northern queen-breeder on an equal footing with the Southern craft, you see. When used as a queen-magazine in this way, each part of the cage is thoroughly waxed to make more comfortable quarters for the queens, and zinc is placed on both sides, also waxed. At the present moment I have one colony caring for 150 laying queens, 75 virgins, and 200 hatching cells. To keep up the strength of this colony I augment the force by occasionally giving hatching brood taken from upper stories, above zinc; and so long as this is done there will be no desire on the part of the bees to kill the queens, yet they can not rear a cell.

I have one hive arranged with zinc division-boards which, at the present time, contains 40 caged laying queens, and one at large on the combs, which I consider a much better plan, but did not think of it in time to be of any use to me the past summer. I have also a colony with 40 queens at work on small combs, in compartments. This is for testing purposes.

There are many points about the introduction and handling of queens in this shape to prevent the balling or killing of a single one, which I will not undertake to cover now.

I am full of new points on bees, among them being eggs for queen-rearing, by mail. I have successfully reared and mated large numbers of queens from eggs sent to me from all parts of the country by post. You will at once see what an advantage this is going to be in the improvement of stock. It places at the disposal of every queen-breeder in the country the finest queens of every other queen-breeder, and the criss-cross fertilization obtained will certainly be productive of wonderful developments. My own golden-all-overs have been much improved by the introduction of the finest drone brood, posted to me in egg-form at very little cost, etc. Then I have arrangements for fertilizing 40 virgins to the full colony, at a minimum of cost; improvements in nuclei management; an entirely new plan for securing comb honey in larger amounts and on surer bases than the old methods; new honey-packages not entirely perfected. I need the help of the fraternity to bring complete success in many of these experiments. Several are trying my U. D. arrangements. I have succeeded finely with it myself; but I do not know what it will do in the hands of others.

[Swarthmore's queen-cell hatchery is very similar in general design and principle to the hatchery described some time ago by W. H. Pridgen, in the *Bee-keepers' Review*, and later in the *American Bee Journal*. The principal difference consists, not in the general construction of the hatchery itself, but in the manner of making the queen-cups. A careful reading of the article, in connection with the illustration, will show how this is done; and although I have not had an opportunity to try it, it strikes me as being the simplest of any of the methods heretofore proposed. Whether this is an improvement on the Pridgen queen-cups or goblets I can not say; but it appears to me as being simpler, and certainly easier for the average bee-keeper to undertake. In a word, Pridgen and Doolittle make their queen-goblets by dipping. Mr. H. E. Hill, of the *American Bee keeper*, by molding; and Mr. Swarthmore by compression, using a molding-stick. The last named is cleaner, and more expeditiously performed.

As Mr. Swarthmore says, these cups can be grafted or not, according to the notion of the queen-breeder; or they can be supplied with "cradles" containing young larvæ and larval food.

With this exception the plan is essentially the same as the Pridgen, which he will describe elaborately very soon in our columns. We are now preparing a large number of engravings which will illustrate each successive step.—Ed]

* * *

MOVING BEES SHORT DISTANCES.

How Far do Bees Ordinarily Fly in Quest of Honey; Moving Bees Short Distances; a True Bee and Bear Story.

BY I. S. TILT.

Mr. Root:—On page 772, Oct. 1, you ask for the experience of others in regard to loss of bees when moved short distances. I have for a number of years moved my apiary, or nearly all of it, just after white clover is past, two miles from home to catch the willow-herb honey-flow, and later the mint and fall blossoms, and I would say, before I forget it, that the flow from willow-herb seems to be very uncertain in this locality. I have had only one good yield from it in four years, although there was just a sea of blossoms each year. Some one may say, "Why move at all when you are only 2 miles from pasturage?" We are told by good authority that bees will fly seven miles in search of nectar, in extreme cases, but, so far as my observation goes, I find that they will not do much at storing surplus when obliged to go even two miles.

But we will say that they do go two miles in search of nectar (from my observation only very few do); they could not make nearly as many trips in a day as if they had only half a mile or less to go.

In regard to loss of bees when moving in the working season, I would say that I never had more than very slight loss. I use the eight-frame hive with flat cover, leaving on from one to two supers in warm weather, using wedges so as to make an entrance 12⅛×1 inch. I nail strips up the sides of the hive, reaching from the cover to the bottom-board to insure against shifting, and letting out bees. I generally do this toward evening, using the smoker to keep them quiet; then when they quit flying I go around and put on the entrance-closers, and, presto! we are ready to load up. I always move at night.

My entrance-closers are made similar to your entrance-guards, only instead of zinc I use wire screen bound with tin around the edges with three blocks to hold them in shape, instead of two on your entrance-guards, one block being in the center of the closer. To fasten to the hive I use three 6-penny wire nails driven through the blocks into the bottom-board. I move with one horse, using a low steel wheel truck with bolster springs and a platform thereon, taking 16 colonies at a load.

I always leave a few of the weakest colonies at home to catch the returning bees; but there are never more than 100 bees that return home from each colony moved. I always leave the bees closed in next day until they become uneasy, then I use smoke in opening them, and set up a board or stick in front of the hive to bother them in coming out, so that they will mark their location.

In the fall, when the honey-flow is over I move home again for winter, and have had but very few bees go back to the old location then.

My bees are all on wired frames, and I have never had any trouble in breaking down combs. This year I averaged 50 lbs. to the colony after moving.

Now for a real bear story. There is occasionally a bear seen around these parts yet, but they are getting to be scarce. Every year, about the middle of September, one comes around to see the bees and get a share of the honey. They seem to have a "mouth for honey," as the fellow said. Well, this year one came on a Tuesday night and picked a hive up and carried it about 6 feet, took all of the frames out of the hive but one, and ate, I should judge, about 8 or 10 lbs. of honey and brood. I have a shanty where I move my bees to with a bed and stove as furniture. There are no neighbors within a mile. I take my wheel and go to sleep in the shanty every night. On getting up Wednesday morning I discovered that Bruin had visited the bees during the night. During the day I took three bear-traps and set them ready to give the bear a warm reception if she returned that night, as I was sure she would. I was a little late getting back to the shanty that night, it being already dark, and as I neared the bees I heard the bear making off through the brush, she not having got up to the traps yet. I lay awake most of the night waiting for her to return, but in vain. Thursday night I arrived at the shanty before dark, went inside, and lay down and kept very quiet. About 8 o'clock I heard one of the traps snap and the bear make one "whoo," for all the world like a hog when scared; but the first jump took her out of the trap, it having got a very poor hold of her. She then went away, but returned the next night, went around all three of the traps, and took another colony, carried it away a short distance, turned it upside down, and took another square meal. Owing to thrashing, I was rather tired, and dropped off to sleep, and did not hear her at all; but on getting up in the morning I found that she had called again during the night. I then moved two of the traps to a new location ready for Saturday night. When evening came I went to the shanty early, went inside, and kept quiet so as not to scare her, as I felt sure she would not elude the traps again. About half-past seven back she came, and plunked a front foot square into one of the traps. I lit the lantern, took the gun and went to shoot her, but could not get near enough until she had taken the trap about 40 rods, with myself in hot pursuit. I was astonished at the speed she made with a large trap and clog on her foot, and that in thick poplars too; but eventually I got close enough to give her a shot which brought her down. I repeated the dose, and soon had the satisfaction of putting my hand on her fur. She weighed 213 lbs., she being quite poor yet. The two colonies that she took a feed out of have built up again for winter all right.

Filion, Mich., Oct. 8.

[I think we may safely set it down as a rule that bees will not ordinarily fly more than a mile and a half in quest of stores; and the great bulk of them will keep within the mile limit. I had very satisfactory proof of this a few years ago—proof that I will not now take space to give. While it is true that bees may fly seven miles, yet such long flights are so very rare that we do not need to count on them at all. If pasturage is beyond a mile and a half, I think it would pay well to move to where it is, notwithstanding some bees might be lost in getting back to the old location. Your scheme of having an entrance-closing device is good. I have thought of something similar a number of times, but never got around to having a set of them made.—Ed.]

MOVING BEES SHORT DISTANCES.

In Gleanings the question is asked in regard to moving bees short distances. I moved my apiary last spring after they had been flying in the spring. We closed up the entrances early in the morning of a cool day, and moved them to a location five rods away, and in the evening we placed a board slanting before the entrance, covering it over, and opened up just a little so the bees could come out; and after being closed up so long, and then finding the entrance covered they took their bearing, and scarcely a bee went to the old stands.

J. T. Van Petten.

Washington, Kan., Oct. 18.

Conversations with Doolittle

LOCATING AN APIARY.

"Good morning, Mr. Doolittle. I have come clear from Texas (by letter) to have a little talk with you about locating an apiary. I expect to start with 25 colonies, and wish to increase them to 100 during the years to come."

"Well, 25 colonies is rather too many to start with unless you have some knowledge already of bee-keeping."

"I have been studying the matter for three years to a certain extent, reading all I came across in the agricultural papers, and I have visited two or three bee-yards."

"This will be a help to you; but before entering the ranks of bee-keepers you should purchase one or two good books on bee-keeping, like the A B C, or Langstroth's work, and read them till you are familiar with the subject. Then you should take one or more of the bee-papers, like Gleanings, *American Bee Journal*, *Review*, *Progressive*, or the *American Bee-keeper*."

"I expect to do this; but what I wish to know just now is, what is the best position in which hives should be placed?"

"In reply to this I would say that they should be perfectly level from side to side, and slope a trifle toward the entrance or front of the hive, enough to carry off the water when it rains. This helps the bees also to build straight combs, where a person allows the bees to build them, instead of furnishing them with frames filled with comb foundation."

"Should hives be always thus fixed?"

"Fixing them in the way I have told you was on the supposition that the frames of comb run lengthwise toward the front side of the hive or entrance, as is considered best by nearly all of our leading apiarists. If they run crosswise to the entrance, then the hive should be level both ways."

"Understanding that part, the next thing

I wish to know is the distance they should stand from the ground."

"On this, good authorities differ. Some say from a foot to eighteen inches, and others think from three to five inches best."

"But what do *you* use?"

"I use an inch-thick bottom-board, with cleats two inches thick nailed on the under side of it, which rest on the ground and prevent the bottom-board from warping. This raises the hive three inches from the ground, that being, to my mind, the distance it should be."

"What reasons have you for that distance in preference to having the hives 18 inches high?"

"The reason for having the distance so little is that on cool windy days in early spring the bees easily reach the hive; while where the distance is great many would fail to get home, being blown down to the ground, or, in a benumbed condition, drop under the hive, where they soon die from exposure. In this way many bees are lost just at a time when they are of the greatest value to the apiarist; for one bee in early spring is of more value than 100 after the honey harvest is past."

"Are there any objections to having the hives thus near the ground?"

"The objections to the low bottom-boards are that toads will get to the entrance to the hive in the evening, and often catch the bees; and ants annoy them more; but I consider neither of these to be equal to that which comes through the loss of bees from the high stands, as the toads can be caught and carried away, and the ants poisoned; besides, these two last do not affect the bees at all till they get prosperous in numbers, after warm weather comes."

"That looks reasonable. And now I wish to know how near the hives should stand to each other."

"My apiary is laid out on the hexagonal plan, the hives being ten feet apart in the rows from center to center, and the rows ten feet apart. Some place them closer, or as near as five feet; but I think that, where the ground can be had without too much expense, the saving of queens when going out to be fertilized, and less mixing of bees, more than pays for all the extra travel which the distance makes."

"But how do you manage to secure the hives in the hexagonal form?"

"To get the hives arranged in the hexagonal form, get a line of the desired length. In your case it should be 100 feet, having a pointed stake tied on each end. Five feet from the stake at one end tie to the line a white thread or string, four or five inches long. Five feet from this white thread, tie a red thread or string, and then a white one five feet from the red, and so on till you have red and white threads alternating at five feet from each other the whole length of the line."

"Having this line fixed, how do you proceed?"

"The line is to be stretched where you wish the first row of ten hives to stand, then you are to stick a little stake at every white thread. Now move the line ahead ten feet, when you will stick the little stakes at the red threads. Then move ahead ten feet again, sticking the stakes at the white threads, and so on till you have stuck the 100 stakes for the stands for your 100 hives or colonies you expect to have in time. Having your stakes all stuck, level off the ground about each stake till you have a nice broad level place ready to set a hive on at a moment's notice at any time. Having it completed, and each stand occupied with a hive of bees, if you are like me you will consider that for convenience and beautiful appearance this plan is superior to any other."

"One more item, and I'll not bother you further. Toward what point of compass should the entrance face?"

"On this point there seems to be a difference of opinion; but here at the North the majority of our best apiarists think that no hive should face north of an east and west direction."

"Which way do you have yours face?"

"I have mine face south. But some of our best bee-keepers in this State think southeast should be the way, for then the morning sun will entice the bees out to gather honey early in the day. However, I see little difference in favor of any southerly direction; but the facing of hives to the north in this cold climate is objectionable, especially in winter, as it nearly precludes the flight of the bees during days when they would otherwise fly, and allows the cold north winds to blow in at the entrance, which is by no means helpful to the bees at any time of the year, unless during the extreme heat during the month of August."

HEADS OF GRAIN FROM DIFFERENT FIELDS

THE ORIGIN OF THE HOT-PLATE METHOD.

In your editorial following my description of the foundation-fastener, Nov. 1, you speak of experimenting with one in which the hot plate slid in a groove, and seemed to think it was a feature of my improved machine. I never had any such combination on my apparatus; virtually the only difference between the modern and the original method is that the plate was *pulled forward* instead of being pushed forward. I have been for some time trying to look up the history of the attempts to use hot plates, and find in GLEANINGS for July, 1888, page 573, that you refer to one that you brought from Utica. My impression is that there was such a machine shown at the Utica convention in the fall or winter of 1887; but as I have not magazines for that time I can not be sure. If memory serves me aright, the machine shown there was somewhat of a curiosity, and did not work always with success, even in the hands of the inventor. As a matter of history it may be worth while to ascertain who this man was. All I claimed was the *discovery* of the *principle* and the *application of it* which made the hot plate a *success*.

In your comments on my suggestion for measuring the tongues of bees, and referring to the shapes of their heads (see page 846 for Nov. 1), I think you misunderstood my intent. What I wished to bring to your attention was in regard to the shape of the head, enabling the bee to plunge its face further into the flower before it has to use its tongue; so, possibly, by watching this feature as well as the length of the tongue we may make even more rapid strides.

Referring to the article on page 840, Nov. 1, by Mr. Stachelhausen on the "New Arrangement for Comb-honey Production," you will find virtually the same plan outlined in the *Review* for May or June, 1899, written by myself. But I am very sure that the experiments which led me to the development of that system were started by the article referred to by Mr. Stachelhausen as having been published in the *Apiculturist* some fifteen years ago. For the prevention of swarming, or, rather, for the making of swarms at our own convenience, the system is excellent. Mr. Stachelhausen's plan is worthy of study and investigation. ARTHUR C. MILLER.

Providence, Nov. 9.

[My memory was not quite clear as to the construction of your original fastener; but I knew there was something about it that did not work right.

With regard to the matter of measuring the tongues of bees, I think I understood you correctly; but, as I before said, it is not so important to know how far individual bees can reach from the mouth parts to the bottom of the flower-tubes as it is important to know the *relative* variation in different bees. If the bees are all measured *by the same method*, the relative variation will be the same.

Years ago I spent much time with a microscope in studying the head and mouth parts of the bee. While I found a difference in the shape of the faces of the drone, queen, and workers, they were all the same with the last named; but recent developments seem to show there is a great variation in the length of the tongues, and, if I mistake not, the variation is confined to this part of the bee's anatomy only—ED.]

PROPOLIS FOR HEALING.

Seeing something in the last issue of GLEANINGS in connection with the healing properties of propolis, and having known of its virtues in this respect for nineteen or twenty years, I thought it well to write. When first I went into the bee business, probably the second year, with Mr. D. A. Jones, some one told me of the healing properties of propolis, and I made the salve for years. This summer I advised a bee-keeper, who had a lot of propolis, to make some of the salve and sell it; but probably he considered it would be difficult to impress people with its virtues, and did not make any. The preparation is made by heating olive or sweet oil and propolis. Enough oil must be put in to make a paste that will readily spread when cool. If too hard, add more oil. An insoluble brown residue will be left when thoroughly heated. This must be removed by straining or dipping when hot. That is all about it. The salve is excellent, and it would be well for every bee-keeper to have some of it in the house; and, more, I believe that where once a customer is obtained there will be no difficulty in more being required when the first stock is exhausted.

R. F. HOLTERMANN.

Springmount, Ont., Canada.

BLEACHING COMB HONEY.

You ask on page 646, August GLEANINGS, what class of soiled sections I can bleach. Well, I have never yet produced any comb honey that I could not improve by bleaching. You mention particles of propolis or dirt going clear through the cappings. I have never found any dirt in my comb honey except once, and I found that it was caused by using sections and combs that I had kept over. I stopped using them, and I have never had any dirt in my comb honey since. I sulphur and bleach all my comb honey, let it be light or dark. The light I can make as white as snow, and the dark white. It all depends on the darkness of the comb as to the length of time that it takes to bleach it. Comb honey should not stay any length of time in the super after being sulphured, as it makes it more difficult to bleach, and will be necessary to sulphur again. When I have a large amount sulphured I take it out of the supers and place it on the shelves to bleach, and clean it after it is bleached.

I neglected to mention in my article on bleaching comb honey, Aug. 15, that I place a board 1×3 around the bleaching-house half way between the lumber, next to the ground and the plate, and this I tack my cloth to. It takes two widths of cloth to cover from top to bottom. I also place bee-escapes in the four upper corners of the cloth, made of screen wire, and funnel-shaped, and these are tacked to strips of wood, and then nailed to the corner posts so they will stand very nearly upright. I should like to hear from some of our bee-keeping friends in the East if they have tried the process of bleaching comb honey, and what success. L. J. CROMBIE.

Fallbrook, Cal., Oct. 8.

1083 LBS. OF HONEY FROM 5 COLONIES.

In answer to your question about the honey-flow, I will say that the 1083 lbs. from 5 colonies was all, but about 50 lbs., from sweet clover, with perhaps a sprinkling of white clover. The 50 pounds was from wild sun flowers or other fall blossoms and is not of a very nice flavor.

A suburban express hauled 600 pounds of bees for me by wagon from a Chicago R. R. station to Morton Park (7 miles) all for $1.00. I didn't kick at all on this price.

Morton Park, Ill. E. W. BROWN.

I wish some one of your subscribers would please tell me where I can find a good healthy bee country, with good schools, in a mild climate, where living expenses are reasonably cheap. HENRY DETMERS.

Carlsbad, N. M., Nov. 16.

TONGUES, LONG AND SHORT.

We often see the question asked in the bee-papers, "Why will one colony of bees gather more honey than another one standing beside it, and equal in strength?" I should like to make a suggestion, that all who have two colonies in normal condition, and apparently equal in every way, and the bees of one prove to be extra good honey-gatherers, and the other poor ones, should measure the length of the tongues of both colonies, and see if the *good* colony has extra *long*, and the poor colony very *short* tongues. In this way we might prove beyond any doubt the practicability of breeding for longer tongues and shorter *stings*.

A. E. WILLCUTT.

Swift River, Mass., Nov. 8.

[Yes, send samples of the bees of each colony, marking the cage of one No. 1 and the other No. 2, but don't tell us which are the good workers. If, after the report is received from us, it appears that the long-tongued bees are the good workers, then we shall have good proof of what we already believe; viz., that long tongues and good working qualities go together. We shall also know that bias could not have influenced or affected the report.

So far the man who does the measuring knows nothing of the bee-keepers who send the bees, and, what is more, he is told to measure without fear or favor.—ED.]

FROGS IN FLORIDA.

Mr. Editor:—I am not much of a bee-man and that sort of thing, but I have a few bees, and hope I shall be able to keep them, and perhaps, by persevering, get a few more. Some time ago I began to hear of the frogs eating bees near here, but gave the matter little attention. We have had frogs here in countless numbers for the last year, and thicker than that when they can get at bees. I at first began to notice that the bees in some of my hives that I was building up were not increasing as they should, and couldn't see any thing the matter with them. One night, going out among them with a lantern I readily discovered where my bees were going. The alighting-board had a row of frogs all the way across the hive, and every bee that came near the entrance committed suicide. When a frog got all it wanted it jumped off, and another one was soon in its place. This disturbance made the bees come out to see what the matter was, only to feed frogs. All the hives were not so bad as this, but they each had one or more frogs at work all the time. Well, I studied how to fix them, for quite awhile, and finally decided the only way was to fence them out. I made a fence four feet high out of an old sail, which works finely for a temporary fence. I think the frogs could jump over it if they tried. They can jump a long way on the ground. I think a fence made out of common lath, ¼ inch apart, would be the best thing.

Now, we don't have frogs like this all the time. They have been bad for a year, and we have not had any before for 15 years; but any one can see that, in a little while, they will weaken a small colony. In fact, I lost one hive from them. Any one who has frogs in his locality at any time had better look to his bees; and any one who has had any experience with them, I should be glad to hear from.

Nathan, Fla., Oct. 22. N. O. PENNY.

DO BEES, AFTER SMOKING, REDEPOSIT THE HONEY THEY HAVE TAKEN DURING THE SMOKING?

In answer to the question asked by A. B. Fish, page 810, if he will take a hive of dry combs and place it over a colony and quickly smoke the bees so that a good portion of them will enter the hive of empty combs he will find, on examining them a few moments later, that a good many cells already contain honey, showing that they redeposit the honey taken during their scare. Their first impulse when smoked seems to be to load up a supply for a new start somewhere else, and when the scare is over it is redeposited in the cells.

Udell, Iowa, Oct. 23. G. B. REPLOGLE.

[This is good proof; but here is more in the same line.—ED.]

On page 810 A. B. Fish asks if the honey with which bees fill themselves when smoked is lost or returned to the combs. I will relate one observation I made last summer of a somewhat similar condition. I have a small colony in an observatory hive, which swarmed out, except the queen, which was kept in by an entrance-guard, and they took every drop of honey they had with them. Certainly none was visible in the comb they had deserted. In a few hours after they had returned and become quiet there was more honey in the comb than I thought possible for so few bees to carry. F. G. ANDERSON.

Wabash, Va., Oct. 22.

GIANT MIGNONNETTE AS A HONEY-PLANT.

I have had a little experience with giant mignonnette on sandy land, and find it an extraordinary honey-plant, as it is in flower this date, and grows large, shading the ground densely. I believe it will pay to sow this plant for honey, unless the seed is too expensive. It would undoubtedly be a good green fertilizer to plow under at the end of the season. Bees are working on the plant at this date. Will you tell us something about it in GLEANINGS, and the cost of the seed by the bushel?

S. J. YOUNGMAN.

Lakeview, Mich., Oct. 25.

[We have grown giant mignonnette; but, so far as I know, it has no value except for the honey, and I can not think it will pay you or anybody else to grow it for honey alone. It will cost as much to plant an acre as it will to plant corn or potatoes. Of course, the bees will do the harvesting; but I can hardly believe that the amount of honey will pay for the labor. Some very extensive experiments were made at the Michigan Agricultural College, Lansing, some years ago, with many of the most promising honey-plants, and I believe the decision was, every time, that it did not pay to grow any thing for the honey alone.

There is always a liability at almost any season that the bees will be getting honey profitably from other sources, and will scarcely notice the plant grown especially for them. No doubt the mignonnette will be worth something to plow under, but probably not more than some kinds of weeds that grow without any care or cultivation. We can furnish the seed in quantities at about 75 cts. per lb.; but after the first year the grower would have an abundance of seed at almost no cost at all.—A. I. R.]

DWARF ESSEX RAPE; ITS VALUE AS A HONEY-PLANT, EVEN AS FAR NORTH AS MICHIGAN.

I notice in your reply to J. H. Gilfillan, in regard to dwarf Essex rape, in last GLEANINGS, you say it does not blossom like ordinary rape. I don't know how the ordinary variety blossoms, I am sure; but the dwarf Essex variety blossoms and matures seed here in Southern Michigan all right. I know, because I have several bushels of seed I saved from a patch I sowed last year. I sowed it in August, about the last, I think. It grew some eight or ten inches high before winter set in, and stood there all winter, and came out in the spring as bright and green as winter rye. As soon as the weather warmed up it commenced to grow, and during July it was a perfect sea of yellow bloom, lasting a long time. I don't know as to its honey-producing merit, but my bees worked on it early and late. It grew from three to four feet tall, and branched out much like mustard. I cut it for seed in August, long before there was any frost. It is highly prized here for pasture for sheep and hogs, remaining fresh and green until very late in the fall. It is also good for cattle, but care must be taken not to let them eat too much until they become accustomed to it, as it is liable to cause bloat. S. H. MALLORY.

Decatur, Mich., Nov. 8.

MOTH-WORMS AND COAL OIL.

To destroy moth-worms in combs, and to keep them out, the plan that I have practiced is to dip the frame slowly into a can containing coal oil so that all the cells will get filled with it; then place it in the extractor, and turn briskly until all the oil is out. Raise the honey-gate and let the oil run back into the can, thus using the same oil over again until it becomes full of propolis, pollen, etc., so that it will not enter the bottom of the cells; then skim it off, saving the scum, which will make a good dope for harness.

Combs treated in this way, and placed back in the hives, the lid put on and set away in the honey-house, will not be interfered with by the moth for the entire season. This has been my experience. C. C. THOMAS.

Riverside, Cal., Oct. 15.

[Combs taken out of a hive that is free from worms and inclosed in a tight box or hive will be protected as long as they are inclosed. While the coal oil would keep moth-millers away from the combs, and destroy worms already in them, it would also have a tendency to keep the bees away from them so long as the smell of the oil clung to them. Bees have an esthetic sense of smell, and I should suppose that your remedy would be worse than the disease.—ED.]

MORE ABOUT THE GRAPE FRUIT, OR POMELO.

On page 855 A. I. R. asks about grape fruit. We will say that 75 trees will grow on an acre. The tree grows like an orange tree and looks very much like an orange-tree. It is called grape fruit because the fruit grows in clusters. Pomelo is the proper name. A gentleman living near Sarasota, Fla., sold last year 12 boxes of fruit from one tree, and received $12 00 per box. From the same tree he expects to get this year fully $200 worth of fruit. The habit of growth of the pomelo-tree is the same as that of the orange-tree. The great demand for the fruit is principally on account of its medicinal qualities.

M. W. SHEPHERD.

Marchant, Fla., Nov. 6.

BEGINNERS' QUESTION BOX BY E. R. ROOT

J. D. E., Ont.—I can not understand why the black bees should be attacking the young Italians raised from the queen introduced, as I never heard of a case like it before. The difference in race certainly could not be a cause for it. Without seeing the bees I should be unable to give any satisfactory reason.

W. I. F., Pa.—I can not understand why one colony in your apiary refuses to kill drones when all the rest are doing so, unless the colony in question has a drone-laying queen. The fact that they have eggs and larvæ doesn't disprove the supposition that she may be a drone-layer, although she may, earlier in the season, have laid worker eggs that would produce worker bees. Queens sometimes fail, and lay nothing but drone eggs. If the drones continue to be in the hive there must be something wrong, you may be sure. Some Cyprians are better honey-gatherers than many Italians. The trouble with them is, they are too cross to handle, and that is the reason why they are not advertised for sale. It is a good practice to feed bees in the spring; but I would never feed as long as they can get honey from the fields. At such times feeding has a tendency to cause them to neglect work outdoors, and fritter away their time indoors, taking feed that they do not have to work for. We send you a sample of alfalfa seed. Alfalfa does not yield much honey except in localities especially adapted to its growth, and where irrigation is practiced extensively. Take it out of its natural habitat it would not compare with any of the clovers in the East as a honey-plant. Indeed, it very seldom yields honey anywhere in the Eastern States, although it is grown to some extent.

EDITORIAL
BY
E. R. ROOT

Now is the season for bee conventions. Let all attend who can.

This winter is starting off with a great deal of snow and rain. This is favorable for young clover, providing we get enough snow.

It appears it was Mr. C. H. Pierce, instead of Mr. Leon Pierce, who took the picture of Mr. France "looking for foul brood." See pages 873 and 882 of our last issue.

The case of Utter vs. Utter will possibly be heard some time during the latter part of December. Our readers may rest assured that they will have full particulars and a full account of the trial.

A great deal of interest is now being manifested on the subject of queen-clipping. I did not suppose, when we started the discussion, that there were so many good methods. These will be described later in our columns.

I wonder how many of our readers have their bees put up in good condition for winter. I am afraid there are some who are waiting for a "more convenient day" when they will have "plenty of time," and the temperature will be "just right" before fixing up the poor bees. Delays are dangerous during these days.

Samples of bees are being sent us daily to have the tongues measured. So far there has not been a single case of good workers where the tongues have measured less than $\frac{18}{100}$; and in the generality of cases they run along about the 19 and 20 marks. The average tongue-length of ordinary worker-bees is between 15 and 16 hundredths. We have yet to find a case where extraordinarily good workers have had medium-length tongues.

We are making preparations for our next issue, the Christmas edition. The half-tones, an extra number of them, will be printed on an extra quality of coated book paper. The series of articles on bottling honey will begin with that issue. There will also be a set of engravings showing the tongue of a bee as seen under the microscope, and how measurements are made. The series of Ridgepole Musings will continue as begun in this issue.

Will those who send bees, the tongues of which they desire us to measure, be kind enough to send live specimens? We can not do much with dead bees, as the tongues are apt to be shriveled up, and it is practically impossible to get any thing like a fair measurement. With live specimens we chloroform them, and this causes them to protrude their tongues to their greatest length; and while thus stretched out the tongues are laid on a graduated scale and measured from the mouth parts to the end of the tongue.

BEE-KEEPERS' INSTITUTES IN NEW YORK.

There will be a series of bee-keepers' institutes in New York, as follows: Batavia, Dec. 12; Canandaigua, Dec. 13, 14; Romulus, Dec. 15; Auburn, Dec. 17; Johnstown, Dec. 18. Bee-keepers living in the vicinity of these institutes are urged to attend and take an active part in the proceedings. The editor of the *Review* and of Gleanings expect to attend these meetings with a stereopticon.

A BEE-CELLAR BLASTED FROM A SOLID ROCK.

Mr. C. H. Pierce, referred to elsewhere in this issue, has blasted a bee-cellar out of solid rock. The roof of this cellar is 10 feet thick; the side walls are 4 rods thick, and the rear wall is about 40 rods thick. Mr. Pierce writes that he had to use dynamite, and blast a hole in the east end of a sandstone bluff. I have no doubt this will be a good cellar, and we should be glad to have Mr. Pierce inform us as to how his bees winter in such a cellar.

HOW TO FEED IN THE DEAD OF WINTER, AND HOW TO MAKE GOOD "GOOD" CANDY.

If a colony runs short of stores, and you have not good combs sealed, give them a big chunk of Good candy kneaded into a stiff dough. Mix pulverized sugar and warm honey. Stir with a big spoon or a wooden paddle. Keep stirring in sugar till it is so stiff it can be stirred no longer. Dust the hands with pulverized sugar, and also the molding-board; then mold and work till the dough is stiff and hard. Let it stand in a warm room; and if it runs slightly, knead in a little more sugar. Place a chunk of the dough, about as large as the doubled fist, over the cluster, then tell the bees to "go Gallagher." It will hardly do to feed sugar syrup so late as this in most localities above the 40th parallel.

MORE RECORDS FROM LONG-TONGUED BEES.

The evidence is still piling up, to the effect that long-tongued bees are the ones that get the honey. D. R. Keyes, of Dixie, Ga., mails us a cage of bees which he says are from "the best working colony I ever saw, by far," in all his experience of 18 years. The tongue-reach measurement shows $\frac{18}{100}$.

Again, another correspondent, J. H. Gerbracht, of Spring Grove, Ill., sends a cage of bees, with a tongue-reach of $\frac{19}{100}$. These bees produced 240 lbs. of surplus honey. While Mr. Gerbracht does not consider this amount as any thing remarkable, yet the record of this colony, in contrast to that of the other colonies, is "rather startling." In this connection he says that, the season before, he made the mistake of requeening almost his entire apiary from a five-banded breeder, which bees, to use his exact language, "turned out to be the most worthless lot of bees I ever saw."

Continuing he says, "The great advantage of long tongues, aside from the clover question, is in the fact that in a locality like this, at least, their greater reach enables them to gather enough when ordinary bees are getting nothing. . . When honey does come in freely, they (the long-tongued bees) make the most of it without thinking of swarming; while the ordinary colonies with the hives partly filled with brood commence storing below, and soon try to swarm, with the result, of course, of wasting the whole flow."

The average tongue-reach of ordinary bees, as I have pointed out, is from $\frac{13}{100}$ to $\frac{16}{100}$; so it will be easily seen that, with the testimony I have produced, bees with long tongues are the very ones to get the honey, and I should not be at all surprised if *all* good honey-gatherers were *also* long-tonguites.

It is apparent that Mr. Gerbracht, in requeening with five-banded bees, expected to get a superior strain; but his experience is not much different from ours, with the further fact that the average yellow bees "sting like fury," and are almost the first to succumb during winter.

THE ONTARIO CONVENTION; IS THE STEREOPTICON TO BE BARRED OUT BY THE CUSTOM HOUSE?

CANADIANS will remember that the Ontario Bee-keepers' Association will hold its annual meeting at Niagara Falls, Dec. 4–6. I am expecting to be in attendance at this meeting with my stereopticon; but it begins to look now as if the collector of customs in Canada will not allow my instrument to go through the lines. It has been the rule that guns, bicycles, and the like, could be taken across by paying a deposit of 25 per cent of their value, this deposit to be refunded on the return of the article and its owner. But in the case of the stereopticon it appears there may be an exception on the ground that it is considered a money-making affair, and should, therefore, be taxed without a refund. But in my case, at least, there is no money in it to me, nor is there to be an admittance fee charged; and as the Ontario Bee-keepers' Association is fostered by the Ontario government, I hope it (the Association) can make such arrangements as will permit of the instrument being used for one night only, and within ½ mile of the American lines. I have some very choice slides which will be exhibited if I can get the instrument through.

Later.—I am pleased to announce that a permit to take the stereopticon and slides across the lines has been secured, and that I will be on hand as scheduled.

GLEANINGS FOR 1901.

I DO not wish to set before our readers any extravagant promises as to what we shall do in the future; but during the coming year I expect to have a series of symposiums on various questions. One of these symposiums will take up the subject of bottling honey, and continue on, perhaps, through several issues. The knowledge of how to bottle honey and keep it from granulating is a very important one. Nine-tenths of the bee-keepers of our land do not know how to fill a gross of Muth jars without wasting labor and honey. Some do not know how to remelt candied honey without spoiling its flavor; others are not expert in putting in corks and making a hermetic sealing. Mere cork alone is not an air-tight substance; and the only way to prevent honey from granulating is to dip the corks in a preparation of paraffine, wax, or rosin before they are inserted in the bottles. It is another trick of the trade to put on tinfoil caps so that the bottles of honey will look as neat and attractive as the ordinary pickled goods we see on the market. Then there is the matter of selecting and putting on a label neatly. The question whether honey should be melted in a large vat, and poured into the bottles while hot, or whether it should be poured into the receptacles cold, and then heated to the required temperature, is important. If the latter is the better plan, how shall it be done? All these and a hundred more nice little points will be answered in the forthcoming series of articles. Many and many a bee-keeper might add two or three cents net to the price of his extracted honey if he only knew *how* to cater to a fancy trade for bottled goods; and if we can help him to realize this extra price, we shall feel that we have been amply repaid for our trouble.

There will be another article or articles on how to refine beeswax without the use of sulphuric acid, and how to get every particle of the wax out of old combs. We expect to show soon how one can make good wages by refining wax by a new plan.

Another set of articles will detail the very latest methods of queen-rearing. Some very short cuts have been discovered during the past season, and, so far as I know, have not yet been made public. Among the writers will be Mr. Pridgen and Mr.—I dare not give his name yet except Swarthmore, for that is his *nom de plume*.

As before, we shall make a large use of half-tone engravings, and these will be printed on coated book paper. Unfortunately, our last car of paper was much below the standard, and some of our engravings have suffered in consequence. But we hope that, next year, we shall be able to present our readers something that will leave nothing to be desired. Taking it all in all, we feel very sure that the investment of the small subscription that we ask will pay a big dividend. The one set of articles that we shall publish, for instance on bottling honey, will be worth many times the subscription price, to say nothing of the other good things that will be given from time to time. We take the *Inland Printer*, one of the finest if not the very finest exponent of its class—indeed, of any class—for beauty of typographical work and fine engravings. There is hardly an issue of it that comes to us but that we get something out of it worth more than the mere subscription, and in a year's time we have picked up enough hints to make it one of the most valuable investments we make.

OUR HOMES,

BY A. I. ROOT.

But he turned and rebuked them, and said, Ye know not what manner of spirit ye are of. For the Son of man is not come to destroy men's lives, but to save them.—LUKE 9 : 55, 56.

But he said, Nay ; lest while ye gather up the tares ye root up also the wheat with them.—MATT. 13 : 29.

Some years ago, when our National convention was held in Buffalo I formed a very pleasant acquaintance with Mr. Orel L. Hershiser, and from that time to this I have planned writing up a very interesting 50-mile wheel-ride I had with Mr. H. and with Mr. Frank Benton ; but other things seemed to crowd it out. Just now I wish to mention a little friendly talk I had with my good friend Hershiser during the trip, or perhaps I had better say a little friendly rebuke or suggestion I received from him. We were talking about these very Home Papers and my lifework in combatting the evils of the present day. Friend H. said something like this :

"Mr. Root, let me say first that I agree with you in the stand you take against the tobacco habit ; but I sometimes fear you are a little hard on humanity. You can not bring the world up to your standpoint, but of course you can do a great deal. Now, may I suggest a way in which it seems to me you might do still *more* good — that is, from the standpoint at which I look at these things ? In this great city of Buffalo I meet with many experiences that perhaps you do not ; and many times the best of us are in a dilemma as to what is the *best* thing to be done. Let me give you one instance. A large manufacturing company for whom I do a great deal of work in my profession as lawyer, often requires the services of an expert draftsman. In building expensive machinery or buildings to contain such machinery they want a man who will lay out the work for the mechanics, taking in every detail and contingency in such a way that there will be no blunders and losses in consequence of mistakes on the part of the mechanical draftsman in laying out the work beforehand. Not only hundreds of dollars but sometimes *thousands* depends on the accuracy, skill, and fidelity of this man who puts the work *first* on paper. Well, they have found just one man who comes up to the mark. Give him time, and every thing he wants, and he will furnish the draft complete in every respect, and almost without mistakes--that is, so far as *he* is concerned. Now, this man is an inveterate user of tobacco. When he really gets to going, with his mind all absorbed in his work, he fills his mouth with tobacco, and from time to time squirts the juice right and left all over the floor, and may be all over the furniture. They have provided him with plenty of spittoons ; but when he gets really absorbed in his mental calculations, he forgets all about the spittoons, and just expectorates everywhere. They have remonstrated, and begged of him to leave off his uncleanly habits. He acknowledges his faults, and promises to do better ; but when he has a really difficult job, especially if they hurry him up so as to have it ready in a given time, back he goes to his old fashion ; and, rather than interrupt him, they let him go on. If they give him his own way, and do not bother him, his work comes out all right. His employers are, generally speaking, clean men, and they have hunted the city over and tried the best men who could be found ; but after they have footed the bill caused by expensive blunders and stupidity they have finally gone back to their regular man ; and as they can not really do any better, they let him go on after his old fashion. Now, what are you going to do in a case like that ? Shall we not take the world as we find it, and put up with a good deal, especially when, as it seems, a good many times we can not, take it all around, better ourselves very much ? This tobacco habit is, I grant you, a bad thing — yes, it is a *fearful* habit. But there are worse things than tobacco."

This is not particularly new to me. I have seen the same state of affairs a good many times. Recently I was visiting a fruit-grower, and became somewhat acquainted with his hired man. My friends, most of you know something about "hired men." This same fruit-grower was telling me about having a man plow, a predecessor of the one he has now. It was in the spring, when every thing was hurrying. His wife looked toward the field one day, and did not see the horses come around as she knew they should come once in a while. She finally went down to the field, half a mile away, to see what the matter was. The horses were eating grass by the fence, and the hired man was asleep under a tree. He calculated he was so far away from the house, and out of sight, that nobody would know any thing about it. I think I will add, on my own responsibility, that very likely he was out the night before pretty late. Well, the man I noticed was an unusually faithful, honest fellow. He was the first one up in the household. I noticed him crossing the road with his lantern, quite a spell before the break of day. The stock were properly cared for, and the horses were ready to go to plow just as soon as it was light enough to see. This man got up thus early of his own accord. He never had to be called. When a storm came up so he could not plow he did not stand a minute looking at the clouds or the weather. He got his team under the shed, then selected a piece of timber he had probably saved up some time previously, and did a very neat job in the way of repairing the wagon. He was handy in the use of tools, and he went to work and repaired breaks, without a word from his employer. One afternoon I ran across him on the other side of a hill, out of sight of the house. He was cutting fodder corn. I stopped a while and began to figure out how I should manage if I were in his place to get the work along as fast as possible. I soon discovered that he had worked at the same problem. He managed so as to save steps. He took as big an armful as he could carry, and he hurried the work along just as if he owned the place, and had some particular reason for wanting to finish the job up before dark. I told my friend he had better keep *that* man if he could; that he might try a good many before he got one that was his equal.

Now, I should like to stop right here, for it would be very pleasant to bestow only words of praise on a young man whom I admire and respect; but it would not be truthful to leave the story right here; and, besides, I should not bring out the thought of our text. With all his good qualities this capable young friend is an inveterate user of tobacco. He made me think of the mechanical draftsman. He not only smokes outdoors, but he smokes in his own room until that part of the house is—perhaps I had better be gentle, and say *perfumed* with the weed. There are young boys in the household who may be induced to follow his example. Yes, and there are young ladies who are obliged to endure the smell of tobacco. They have not complained, not one of them; but I do know that this man would get more pay if he had all his other good qualities and did not use tobacco. Now, some of my readers who smoke and chew may say, "Why, Bro. Root, you are unconsciously putting in a great plea in *favor* of tobacco. How do you know that the two men you have mentioned are not both *capable* of greater endurance, mental and physical, because of the stimulus of the narcotic?"

I have thought of that, dear friends, and I have watched it closely. Thank God I have seen just such men break away from the tobacco habit, and I never saw one who lost vim, energy, skill, or endurance by the change. But the main thing we are discussing just now is, "What shall we do with cases like these?" What would *Jesus* do? I think he would take mankind as he finds it; and instead of combatting and arousing fierce opposition by an unchristianlike way in rebuking sins he would first win the man's respect and esteem, and, if possible, his confidence and friendship, and then leave him, at least to a great extent, to make a direct application of his sayings.

It is not only the men who have been tried and perhaps sorely vexed with the hired help, but our wives and daughters are having similar trials. In the present state of society, help in the home as well as on the farm is almost a necessity; and, oh dear me! what stories we hear about hired girls! Some of them are jewels along certain lines; but, the first thing you know, there is a sad defect somewhere. When we hear the story of it we are *tempted* to say, "Well, I would not have *such* a girl on the premises over night." Then the good housewife tries another one. The new one is, perhaps, all right so far as the fault of her predecessor is concerned; but, pretty soon, out crops another one, may be worse than the first. Shall we try again? My dear brother and sister, I have grown *gray* in trying to solve these problems. If you turn a boy or girl off and hire somebody else, as a rule you do not make either of them any better. Then the question comes up, "What are we here for?" Did God place us here to live a human life just to have us learn how to get along easily, without care or worry, or did he put us here to help lift the burdens that rest on humanity? If you succeed in getting one of these boys or girls to recognize their sinful ways, and to set about overcoming their bad habits, then you are saving a soul from sin—you are doing missionary work without going to Africa, India, or China. "He which converteth the sinner from the error of his way shall save a soul from death, and shall hide a multitude of sins."

I often advise men and women to keep their hired help in *spite* of grievous faults. Sometimes a woman will say to me something like this: "Mr. Root, would you advise me to keep a girl who looks me square in the face and tells deliberate lies?" Before answering the question I usually ask a lot of others. If the girl has redeeming traits, and there seems to be hope that she may be partially or entirely cured of this terrible sin, I would say, keep her; and I have even gone so far as to advise keeping a man who steals. Keep temptation out of his way. Exhort him on general principles to be honest and upright—that is, while you lack absolute proof of his stealing. Pray for him day after day, and you may some time have one of your pleasant surprises by discovering that your prayers are being answered; and in regard to the hired-girl question, dear sisters and mother or daughter, do not be *too* exacting. Pray for grace and wisdom. Ask God every morning to help you not to expect too much of the girl in your employ. Watch for her good qualities. Encourage her in developing them. Hold these up before you instead of dwelling too much on the shortcomings. Remember we are all selfish and sinful in God's sight. Breathe often the little prayer, "Forgive my debts as I forgive my debtors." Ernest once said, "Father, you must not expect every one to be sound all around. The very best men in the world have some lamentable weaknesses; even our college professors—men who should be above reproach—now and then not only show folly but *sometimes* downright wickedness and sin. You will find it in everybody. Do not be too hasty in condemning. We must 'size a man up' and try to let his general good qualities overbalance his infirmities in certain directions."

Dear friends, what I have to say in closing I try to say with reverence and respect toward the chief magistrate of our land. Some little time ago I was overtaken by a storm while out on a wheelride, and stopped at a farmer's. He knew me by reputation, and he was anxious to have my opinion on the political issues. He had been reading the papers, and was pretty well informed. He was a man of excellent physique, and seemed to have a very good general all-around judgment and perception. He was a very loyal and strong defender of the present administration. When I told him how I felt troubled in regard to the matter of intemperance in the army he said something like this:

"Mr. Root, we all have our opinions in regard to these matters. I may not be right; but these things you have mentioned in regard to the attitude that the President has taken toward the army canteen is, it seems to me, a small matter compared to other issues — yes, an exceedingly small matter."*

Now, I need not tell the readers of GLEANINGS how *I* feel about this thing, for I have told it already; but is it possible the truth, or the wisest course, lies somewhere between myself and the old farmer? When anybody suggests that intemperance throughout the world is a small matter compared with other things or other issues, if you choose, there is a strong tendency in my breast to get all stirred up and to become vehement. But God knows I want to do what is right in his sight. Is it possible that we temperance people will do *more* good by submitting, at least for the time being, to this terrible thing rather than go to too great extremes in stirring up matters? May God give us light and wisdom.

In looking over the world, and in getting the views of the best men and women I know of, it has seemed to me as though the general tendency is to—well, let us say to do about as our good friend Hershiser said the great manufacturing concern did in regard to employing a mechanical draftsman. They decided to keep him until they could find somebody else who did somewhere nearly as well, and who did *not* use tobacco so "recklessly." Everybody has met these problems. We have got to meet them at home—yes, oftentimes with our own children. And, by the way, of all the sad quarrels this world presents, there is none so sad, as it seems to me, as a quarrel, or, if you choose, even a disagreement and a difference, between parent and child. Dear father and mother, do not be too severe and exacting with your own children, especially when the boy or girl approaches the critical period in the "teens," when they come to that dividing line between childhood and manhood or womanhood. May God give us grace and wisdom. Of course, you are not to let things drift or go. I would not have you let up one single iota in watching and praying and exhorting and entreating; but, dear father and mother, *whatever* you do, strive to do that which will make things *better* and not worse. Jesus told the disciples not to pull up the tares, for, even if the tare *was* destroyed, it might result in *more harm* to the wheat, and so they were to let it grow; and when James and John thought it a proper thing to do to call down fire from heaven, and consume the foolish people who would not receive them, he replied in the manner of our text, "Ye know not what manner of spirit ye are of." Then he reminded them that he came to this world — in fact, his *mission* here was—to *save* men, *not* to destroy them. Now, shall we not, as his followers, be very careful —yes, exceedingly careful—that we do not destroy more than we mend. We are all liable to get stirred up by some little thing. God knows it is my besetting sin, and I fear the temptation will follow me to the end of my life. Let us beware of *Satan* along this line. He is not at all slow in suggesting that we should be doing Christ's work in setting our foot down as to what the children shall or shall not do, or in ordering the hired man or hired girl to "to get right off the premises," for I am told that is the way they sometimes do it. If you really feel as if you must dismiss your hired help, do it gently, and do it kindly. Do not be in haste. Tell them pleasantly that you will give them time to find another situation, and then shake hands in parting, and part good friends. You may want to work together again some time; and, oh it will be so much pleasanter—so much more Christian-like — to bid each other good by in a friendly way when you meet again! Yes, I would say this even if the hired girl has been telling you *lies*, or if the hired man has been stealing your property — that is, where you can not really prove it. Keep up pleasant terms, even with a bad man — that is, so far as you can do it without compromising Christian dignity and integrity. And finally, dear brother or sister, hold fast to that old well-worn text that the world scarcely even *yet* gets a glimpse of: "Love ye your enemies; do good to them that hate you; bless them that curse you, and pray for them that despitefully use you."

NOTES OF TRAVEL

BY A. I. ROOT.

Along in the middle of November, whenever the roads are fairly good, I try to take as many wheelrides as possible before wheel-riding is done up for the winter. One day, about the middle of the month, while I had this idea in mind, the following came on a postal card:

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* Since the above was dictated, a vivid illustration of the harm we may do by demanding that everybody, especially every Christian worker, shall come up to our standpoint (or our ideas, perhaps I had better put it, of how things should be), has come to light. The W. C. T. U. of the State of Ohio has a department pertaining to the use of narcotics. At the head of the department for this very State they have had, until very recently, a most energetic, vehement, and successful worker of great ability. Well, somebody discovered that this good woman's husband was growing tobacco on his farm. You may all say it was a bad state of affairs—the wife leading a reform movement for the whole State *against* tobacco, and her husband growing crops of it year after year. There was a great deal of murmuring, and finally she thought best to resign. She did so at a critical period, when a law was about to be passed against the traffic in cigarettes. With her ability, energy, and vim, the law would no doubt have carried; but the Christian people put in another good woman, whose husband did not grow tobacco. They gained something in one direction, anyhow; but the new officer, although her intentions were all right, did not seem to have any aptitude for the office. Perhaps we may say, as the boys do, "She was not built that way," and the cigarette-dealers carried the day. Some may say this woman should have made her husband give up growing tobacco. Well, this might be almost like the disciples who asked the Master to call down fire from heaven; and it might be a bigger job, too, than pulling the tares out of the wheat. The husband did not see fit to meddle with the wife in her work against narcotics. She might, of course, use all her womanly influence to get him to stop growing the crop. Failing in this, would anybody advise her to get a divorce and break up the family? God forbid. It is an easy thing to look over the fence and decide what your neighbors ought to do; but were you to stand in their shoes a little while, may be you would do as they do, and at the same time do the wisest and best thing. I am glad to add, a most faithful and efficient lady now has charge of this department of the W. C. T. U. work.

Mr. Root:—Please send us 2 lbs. Grand Rapids lettuce seed, put up in 1-lb. packages. C. Z. YODER.
Weilersville, O., Sept. 5.

I remembered this same Mr. Yoder had been ordering every season unusual quantities of Grand Rapids lettuce seed. Weilersville is a little bit of station about a mile and a half from Smithville, where, you will remember, I visited the pickle-factory and wrote it up. Now, the question in my mind was, "What does this man Yoder do with Grand Rapids lettuce seed by the pound? If he sows it all he must be quite a lettuce-grower; and I do not think he can be in the seed business, because I should have heard of him;" and I resolved to take a wheelride down to his place whenever the weather was even fairly promising. Accordingly, one afternoon when the sun came out, and the roads were fair, I started off expecting to reach the place before dark. I had not calculated, however, for the short days, and it was too dark to see to ride comfortably when I reached a spot out in the country, near where I was told Mr. Yoder lived. Of course, I was watching for greenhouses and cold frames extensive enough to take care of the plants that a pound of lettuce seed would produce. Sure enough, on looking over toward a farmhouse back in the lots I was rewarded for my long ride. Four greenhouses, each 150 feet long and about 25 feet wide, with the glass glistening in the moonlight, met my view. Just back of the greenhouses was a large red barn overhanging the stables, just such as we see belonging to thrifty farmers. Near by was a very pleasant country dwelling. A young lady was just carrying in a pail of milk, and in answer to my inquiry for Mr. Yoder she said he had gone west on a visit, and would not be back for several weeks.

"Well, I am A. I. Root, of Medina. I do not know whether you people know me or not. I should be glad to see whoever it is, belonging to your family, that has charge of the greenhouses."

"Oh! yes, Mr. Root, we know *you*, and are exceedingly glad to see you, although father is away. My brother will be delighted to talk with you about the greenhouses, and mother will rejoice also to see you in our home."

In a few minutes I was ushered in with something like the following:

"Mother, I know you will be very glad to know that Mr. A. I. Root is actually here in our own home."

It did me lots of good to get such a welcome from people I had never seen before. As it was already after dark I felt a little backward about intruding; but the mother and daughter and three boys soon made me feel quite at home. I wonder if all country homes set such a bountiful table for their evening meal.

The eldest son, who managed the greenhouses, had just been having trouble with the lettuce-rot. After supper we went out with a lantern and looked over the plants. The houses are built purposely for lettuce, and no attempt is made toward ornament. The beds are right on the ground, and the sashes along at the eaves are so low down that one has to stoop over to work among the plants. The seed is grown in flats, and transplanted in flats. In fact, the whole thing is managed a good deal like the lettuce-growing at the experiment station at Wooster, which is only five miles from Mr. Yoder's. The plants are watered by simply setting the flats in a water-bench and then lifting them out again. From the flats they go right into the large beds, which I think must be about 12 feet across. They work on these beds sitting or kneeling on a wide stiff board. This board is kept above the plants by two or more pieces of 4×4 scantling. To make it easier on the knees the board is cushioned on the upper side. After the plants are set, the ground is stirred and weeds kept out with a hoe having a handle some ten or twelve feet long. This will reach clear over under the eaves, so you see there is not much need of standing up where the glass comes down low near the plants. There is also an advantage in having a glass come near the plants.

Now about the lettuce-rot. This is a common difficulty, especially where lettuce is grown season after season on the same ground; and it just now occurs to me that I got a hint from Eugene Davis I forgot to mention during my recent visit to his place. His lettuce seed is all grown in pure sand, and the seedlings are transplanted into a bed of pure sand and nothing else. No manure or fertilizer of any sort is used. After his transplanted plants have got good strong roots, they are planted out in beds made very rich with stable manure. In this way they seldom rot, for rot usually commences when the plants are small. The first symptom is seen in the roots. They turn black; but so long as these roots are grown with just water and sand, they are perfectly healthy; and a good strong thrifty plant will seldom take the rot before it reaches maturity.[*]

Well, at friend Yoder's we had an object-lesson that pointed very clearly in the direction that the rot is the effect of strong manures. They had just purchased a carload of pigpen manure from Chicago. In order to get a good big strong growth they put this manure on to the end of the beds nearest the door, pretty liberally; and another thing, it was not chopped into the ground deep enough and with sufficient thoroughness. Our plan is to mingle the manure and soil by shoveling it through a coarse sieve. Well, where they put this strong manure in, more than half the plants were lost by the rot. Where they put on less there was not so much of it; and where they did not have enough to reach, there was none at all.

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[*] Since the above conversation with Eugene Davis we have sown a plot of seed in pure sand and one in a mixture of sand with sifted jadoo fiber. That with the jadoo fiber goes away ahead of the other; and my impression is, the plants will be as safe against rot as in pure sand. The jadoo has been exposed to a temperature so high as to kill all weed seeds and any sort of fungus that might produce rot. Its fertility is owing to chemical fertilizers that are boiled into it; therefore it would have none of the property that stable manure sometimes or always has that might start rot. My impression is, we can well afford to use a certain amount of jadoo, say half and half (in *bulk*), or less, with sand, for starting seeds, and perhaps, also, for the first transplanting. The only objection to the jadoo would be its expense; but when we take into consideration how very light it is, and that a single pound makes quite a large bulk, the price, 2 cts. per lb., by the bag, may not be an objection for growing Grand Rapids lettuce under glass.

Our older readers may remember that my first glimpse of the Grand Rapids lettuce was by the light of a lantern; and ever since then there is something exceedingly fascinating to me in viewing a lettuce-house by lamplight. The four houses are warmed by steam. The steam is produced in two cheap second-hand boilers—at least I think they were second-hand. I told them their boilers were not very economical of coal; but as they are located right in the coal regions where coal is very cheap it did not matter so much. The boys and their father did their own piping, thus saving a great expense. Of course, they had to learn some lessons by cutting and trying before they learned the kinks of heating by steam and hot water.

I wanted to get over to the experiment station bright and early; but during the night the ground was covered with snow. My young friend generously volunteered to take me and my wheel over to Wooster; but I told him I would first try and see if I could not ride such a short distance in spite of the snow; and I got on very nicely with my gear-case covering the chain. Now, these good people not only have a greenhouse to work in during the winter, but they grow small fruit. I think they have two acres of strawberries, three acres of raspberries, as many or more of blackberries; ten acres of peach orchards containing some very nice good-sized trees. They have never yet had a crop of peaches. They do not feel troubled, however, for one fair crop will probably pay all the expense of the outlay. Of course, I promised to call again when small fruit is being harvested. And, by the way, I do not think I ever saw a cleaner strawberry-patch than I found here in November.

After having had a very pleasant visit with Prof. Green and Prof. Thorn, and a hasty look through the greenhouses, I started off. I had in my overcoat pocket, however, some slips taken from the greenhouse, of a new weeping Lantana and a new Ageratum and some other plants.

On top of the hill just north of Wooster I found a beautiful new greenhouse just in process of construction. It belongs to Prof. Thorn's son, who is building it purposely for growing Grand Rapids lettuce. It embodies all the latest improvements, and will probably be a model structure, especially as young Thorn has his father, and the benefit of the near-by experiment station, to advise and suggest.

I hope our readers will pardon me for saying that I look on this lettuce industry with a great deal of pride and satisfaction, especially when I remember that I not only introduced the Grand Rapids lettuce and its method of cultivation to the world, but I also gave it its name.

I have thought for several years that the business would certainly be overdone; but somehow or other I have never heard of anybody who grew a nice crop and could not find sale for it. Of course, the price sometimes gets down pretty low. It is an industry that anybody can work at during odd moments, and it is something, too, that the wife and children can all share; for if the temperature of the house is right for the plants it is just right for children, young and old; and I think growing plants under glass is just about the nicest business in the whole wide world.

I started from Wooster just about noon for a ride of about 30 miles before dark. Pretty soon it began to snow; but as the soil in that direction is more or less sandy I got along very well. But it snowed harder and harder; in fact, the snow stuck to my clothing until it made me so heavy I was obliged to get off the wheel now and then and shake myself to get rid of the surplus weight. I am afraid some people who passed me thought I was to be pitied. Bless your heart, I was having more real solid enjoyment than anybody I passed, indoor or out. At Creston the snow was so deep, and my wheel slewed about so much, I rounded up at a station; but when I was told I should have to wait two hours for a train that connected with our own road, three miles east, I concluded I could stand the snow better than I could to sit in the waiting-room for two hours. So I wheeled about and went three miles further, straight northeast, to Seville, through the mud and freezing slush. As the rest of the ride was through a clay soil I concluded I would have to wait for the train on our road. I thus avoided the necessity of changing cars, you see. I spent about half an hour in slicking myself up, shining my shoes where the mud was thrown on them, then slept half an hour in a very pretty nice new hotel in Seville. Let me say I went into the hotel, asked for a drink of hot water, a place to take a nap, and borrowed an umbrella, and made myself generally at home all around the premises; and yet the obliging proprietor and his wife would not take a penny. Now, when you find fault with hotels because they are not just perfect in every respect, you should remember the amount of service they do that they do not get any pay for. Well, after my nap I took the borrowed umbrella and hunted up a greenhouse, and thus passed the time very pleasantly until train time.

HIGH PRESSURE GARDENING

BY A. I. ROOT.

A NEW BEAN.

Last spring we received a very small packet of beans for trial, from F. B. Mills, Rose Hill, N. Y. The packet was labeled "New Bean No. 6." The whole number, I should think, did not exceed a tablespoonful, and these were planted with a lot of other beans for a test. I think it made a row perhaps two rods long, and may be more. When they began to blossom we noticed the row was loaded with pods away ahead of every thing else. When these beans were ripe enough to shell we cooked one mess of them, and they were so delicious I told the boys to save some of the ripest pods and plant them, and see if we could not get a second crop. They did so, with the following result: First crop, 1½ quarts besides what we cooked. Second crop, 3 quarts. We might have planted a good large patch of the first-crop beans, but I had little faith they would ripen before frost. To my surprise they ripened up dry almost a month ahead of any killing frost; but the frost this year held off till the first week in November. Well, now, these beans are not only excellent in quality, but they are wonderfully prolific. They are small in size, it is true—not very much larger than a common Navy or pea bean. They are dwarf in habit, and might on that account be used for forcing under glass. My impression is that we could grow two crops on the same ground in any ordinary season, and I think they would make a prodigious yield per acre. Mr. Mills informs us the new bean has been named the Prize Winner, and that they have already given a crop of 40 bushels to the acre.

While we are on the subject of beans, here is a report from one of our employees:

From one quart Davis wax beans planted, I picked over 7 bushels of fine string beans. From one quart Burpee bush limas planted, I picked over 70 quarts of shelled beans, besides several quarts dry, not yet shelled. The above were never hoed—were cultivated twice, and weeds hand-pulled near the plants.

Medina, O., Nov. 13. BERT WASHBURN.

The above is not only high-pressure gardening, but it is good crops with very little work. Out experiment stations once made a test to see how much difference there would be in a crop by keeping the ground mellow, or simply scraping off the weeds with a hoe to keep the crops clean. They were surprised to find very good results without so much cultivation. But the outcome of such an experiment depends very much on the amount of rain we get. During the past season all kinds of beans have made a remarkable showing in our locality, because, with the exception of a short time in the spring, we have had almost all the rain needed all summer long. At such a time, pulling the weeds by hand would do almost as well as hoeing. When it comes to a scarcity of rain, however, a constant stirring of the surface of the ground might make all the difference between a good crop and an entire loss.

MUSKMELONS AND CANTELOUPS.

A. I. Root:—Can we grow as sweet and well-flavored cantaloups in the North as we get from the South? I grew some this year for the first time, and, even when they were ripe, they did not taste like muskmelons.

What variety is the best flavored? Please tell us something about muskmelons in your talks on gardening. JOHN MAJOR.

Cokeville, Pa., Sept. 13.

Nice sweet canteloups can be grown almost anywhere if you can manage to avoid blight. While a sandy soil or sandy loam is best, we succeed in getting nice melons almost every year in our Medina clay. I think yours must have blighted before they were fully ripe. In this case they would taste as you describe. Make your soil rich with old well-rotted manure. Work it up deep. Get the melons in early; and if they grow right along you will be pretty sure to have good ones. Stirring the soil so as to break up the crust after every rain has very much to do with making a success. Some of the finest melons I ever grew are secured by stirring up the soil with a sharp garden-rake clear down until I could see the white roots. This was done every time a big rain packed the soil again. It is hard telling what the best varieties are. The variety named Rocky Ford has a great reputation, and I think it will be safe to plant the Rocky Ford melons. The Fall Rose, which we have advertised lately, is also a very fine one. As seasons vary, I would make plantings both early and late. We have had fine cantaloups some seasons from seed planted in June; but a good deal depends on having timely rains. But don't give up, even though your soil is not specially adapted to melons. We have this season also produced nice watermelons, even though they are not adapted to our clay soil. The Miller's Cream canteloup is very sweet and very early, and will succeed in almost any soil; but the Extra Early citron we advertise is probably the *earliest* of all.

COLEI, ACHYRANTHUS, ETC., IN THE FALL.

I think I said in June and July that I had not seen any really fine coleus-beds this season. Our own, on our grounds, were dull in color and slow in growth. When I visited Chicago I did not see any fine ones in Lincoln Park, and none on Vaughan's grounds. Not long afterward, however, I discovered the reason. The weather had not been warm enough, and we had not had sufficient rain. In Canada I saw some fine ones, and during August and September I think we have had the most beautiful golden bedders, and achyranthus for contrast, that I ever saw anywhere. Under the influence of abundant rain and exceedingly warm weather the plants made an astonishing growth, and in brilliancy of color they eclipsed any thing I had ever seen. I asked one of the florists when was the proper time to make cuttings of our choicest plants to be wintered over in the greenhouse. He said we could make them any time in September; that they usually cut their largest and finest plants all into little bits just to make cuttings. Well, one day we moved our little cutting-bed (a frame with a glass sash hinged to it) out in the open ground. It was set over a bed with two or three inches of common river sand; then the cuttings, perhaps 100 in number, were taken from our best plants, and put about an inch apart all through the frame. In three or four days every cutting had taken root, and the little frameful, perhaps 15×30 inches, was just a thing of beauty. It gave me a thrill every time I lifted up the lid to look at the plants. We proceeded just as we did in the winter time, to get cuttings. The cover to the box is just simply a pane of glass with a frame around it. This shuts down tight so as to preserve the moist atmosphere inside; and when the sun shines, a frame of cotton cloth is laid over the glass so the heat will not be strong enough to scorch the plants. Our finest red or purple plant is the *Achyranthus* *lindeni.* Then we have some deep-red colei for a contrast to the golden bedder. These beautiful foliage-plants, when grown to perfection, are to me fully as handsome as any flowers in the world; and when you once get the hang of it, it is the easiest thing in the world to get rooted cuttings by the dozens or hundreds. Now, please do not ask me to sell or give away these plants I have mentioned. With all the business on our hands we really can not do it—at least not now. You can get them of our friend S. W. Pike, St. Charles, Ill., cheaper than we can possibly grow them, or of almost any other florist.

HIGH-PRESSURE GARDENING, OR, RATHER, FRUIT-GROWING, IN COLORADO.

I thought I could top all of your articles on high-pressure fruit-growing; but the Nov. 1st number of GLEANINGS has proved too much for me. However, as my little story is simply one of peaches and apples, and grown only by ordinary culture, I will send it along.

Our situation is in a little valley on the western slope of the Rockies, known as the North Fork of the Gunnison. It is a small valley, with peaks running from 10,000 to 13,000 feet elevation on three sides of it, and snow in sight for ten months in the year. and but a few miles away. The altitude of the valley is 5500 feet, or over a mile above sea-level. It seems wonderfully adapted to fruit-raising, and we raise to perfection all the fruits grown in the United States except the tropical fruits.

Last year a man here measured off an acre of peach-trees and kept account of it. He netted $1000 from that acre. But perhaps a more convincing report is that from a woman who last year had 3⅛ acres in peach-trees. The fruit from these was sold to one dealer for $3000. This year she had four acres in bearing. and the same man gave $2800 (or 50c a box) for the fruit. and she sold some $200 worth besides.

These orchards received simply the ordinary care, but they are very favorably located. They are, of course, above the average, but the general run of orchards here produce results far ahead of any other locality I know of.

One little orchard of three to four acres of apple-trees produced a crop of apples that sold for $1400 for the choice apples, leaving all the second-grade, which brought a few hundred more. I can't give any returns on winter apples for this year as yet, but some 30,000 boxes have been bought and shipped by a Chicago firm, for which they paid from 50c to 60c a box, they doing all the work except the picking. and also furnishing the boxes. Then they had to have them hauled 30 miles to the railroad. They consider the cost is from 80 to 90c a box on the cars; 2½ boxes equal one barrel, and the same firm are buying apples in the East, they claim, for $1.10 a barrel, so you see the *quality* is here.

I will try to get some figures about the apple crop later on, and let you know. H. L. JAMES.

Hotchkiss, Colo., Nov. 7.

Humbugs and Swindles.

"ANOTHER WARNING IN REGARD TO COMPOST PEDDLERS."

The above is the title of a bulletin issued by the North Carolina Experiment Station. They send it out because so many rascals are going about the country offering to sell recipes by which any farmer can manufacture the best fertilizer, as they claim, that costs only $3 00 a ton. The price of this recipe is $5.00. The bulletin tells how it is done, and gives the recipe in full.

Now, this illustrates once more what I have been laboring so hard for years to teach the general public. There are no valuable processes or recipes for doing any thing, hawked about the country for a certain sum of money, say $5.00 for something that is printed on a piece of paper not larger than a postal card. The whole thing is a humbug and a swindle. Our agricultural books and papers contain all the valuable information as soon as it has been proved to be valuable. The experiment stations of the United States are constantly devoting a large portion of their time to testing all these things as fast as they come up.

Another of these swindles is what is called "the farmer's compound fertilizer." It is a plan of composting all the manures made on the farm, with various chemicals. No doubt the stuff can be made for $3.00 a ton or less, especially if the farmer does not count his time any thing while he is "fussing."

But this bulletin discusses all these plans and processes. It shows up their weak and absurd points, and then tells the farmer, free of charge, the most intelligent and up-to-date plan of composting and mixing his stable manures with peat, muck, straw, or soil. Market-gardeners and greenhouse men are already in the business of making valuable compost from every thing available — street-sweepings, muck from the swamp, leaves from the forest, etc. But these rascals that are stealing money from the farmers under the guise of being scientific are not even as well posted as the gardeners and florists in this business. When any such man comes around and wants $5.00 or any other sum for such a secret, show him this, and then set the dog on him.

Once more: Why should anybody pay $1.00 or $5.00 for what is printed on a little bit of paper when the whole thing might be given, and, in fact, *is* given, in our agricultural papers that go to thousands of people? and instead of paying $1.00 for what is printed on a little scrap of paper you get a great big valuable newspaper once a week, with thousands of such valuable items, for a whole year, for the dollar. The only trouble about the home paper is that it sometimes is inconsiderate enough to help push these schemes in their advertising columns.

OUR RELATIONS WITH CHINA.

We quote as follows from a writer in the *Rural New-Yorker:*

> Our exclusion of Chinese subjects from residence here, while demanding entrance into China for all sorts of American enterprises, has aroused a deep resentment. . . . After exacting a reasonable compensation for the loss of American lives and property we should get out of China, and stay out until we are welcomed back. asking only such privileges as we are willing to accord the Chinese—that of merely trading between the ports of the respective countries.

I confess I have always wondered how we could demand freedom in traffic and travel on Chinese soil while we single out China alone among the nations, and forbid her people from setting foot on our soil. Yes, I have heard the matter explained, and I have listened to the reasons; but still I am not satisfied. If we wish and expect to be permitted to carry the gospel of Jesus Christ to China, and civilization with it, are we not in duty bound to practice a little more the teachings of the gospel in our treatment of the Chinese people who wish to come over here?

Longest Tongues.

For two years I have been advertising and selling a superior strain of bees. I knew that they were really superior, that they stored more honey than any other strain of bees with which I was acquainted, and that others who had tried them had the same report to make; I knew that they were gentle and hardy, as well as industrious, but just *why* they should store more honey I was unable to decide. It is possible that I do not now know why; but at last I have got a hint—they have *very long tongues*. The average length of bees' tongues is 16-100 of an inch, while these bees have tongues 23-100 of an inch in length. Only one other report has been made of bees having tongues of this length. This breeder, who has been furnishing me queens, has been breeding this strain of bees for more than 20 years, always selecting the best to breed from, and, for this reason, this trait, or peculiarity, that of having long tongues, must have become fairly well *fixed*—much more so than in that of some chance sport. The discovery of this reason for their superiority is the source of considerable satisfaction to me. Heretofore I could only assert that the bees were superior, that they would store more honey, but I could give no reason why, except that this trait had been developed by years of selection and careful breeding; now I can say why, or, at least, give a reasonable reason why.

I wish to repeat what I have already said several times; viz., that it is impossible for a bee-keeper to invest a small sum of money to better advantage than by introducing this strain of bees into his apiary. It will repay him a hundred fold—perhaps a thousand fold. In addition to their known length of tongue, there are also the additional traits of hardiness and gentleness—something well worth considering.

To those who are thinking of trying this strain of bees, I would say, don't wait until next spring before sending in your order. Last spring, when I began sending out queens, there were orders on my books for nearly 200 queens. Orders are already coming in to be filled next spring. They will be filled in rotation; so, if you wish to get a queen next spring, send in your order this fall. The price of a queen is $1.50; but safe arrival, safe introduction, purity of mating, and entire satisfaction are all guaranteed. The queen can be returned any time within two years, and the money refunded, and 50 cents additional sent to pay for the trouble.

The REVIEW for this year and next (two years) and one of these queens for only $2.00. As soon as your order is received, the back numbers for this year will be sent, and your subscription put on the book to the end of 1901, and next spring the queen will be sent you.

I have many unsolicited testimonials as to the superiority of this strain of bees. Here is the last we received:

WOODLAND, ILLS., Nov. 20, 1900.

Mr. W. Z. Hutchinson:—

Can any more of those queens be purchased of you next season? The one I bought of you last June out-stripped every thing else in this vicinity. As a breeder, she certainly capped the climax of any thing that ever came under my observation in the bee-line. And her offspring—well, they are simply marvelous as workers. From her colony, in September, I extracted 65 lbs. of honey of the finest quality and, remember, the honey season here was a very poor one. There are a number of apiaries in this vicinity, and I do not know of one that will average 10 lbs. per colony. And I want to add right here that the cappings of the honey in this colony were of snowy whiteness; and, to-day, as I put this colony in winter quarters, I find the eight combs well filled and capped with that same snowy whiteness that was so conspicuous in the supers. I stand ready to challenge any apiarist in this locality to produce bees the equal of these as honey-gatherers. Two of my friends wish to get queens of this strain, and I certainly want more of them if they can be gotten.

Yours respectfully, C. E. AURICK.

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W. Z. HUTCHINSON, = FLINT, MICHIGAN.

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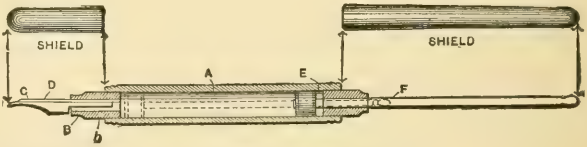

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or for one new subscription and your own renewal with $2.50;
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In each case all arrears, if any, must be paid in addition, the above offers being for subscriptions fully in advance only. I believe we can say truthfully, without fear of contradiction, that no fountain pen ever put upon the market ever received in so short a time so many unsolicited testimonials from such distinguished men as the POST. The above drawing shows its construction. To fill the POST, all you have to do is to dip the nib into the ink-bottle, draw out the plunger, and the pen is ready for use. Compare this with unscrewing the ordinary style, and refilling with a glass filler that you can not always find when wanted. The self-cleaning feature of the POST, as illustrated, will also commend itself. With most pens specially prepared ink must be used or they are soon of no use, because they become so gummed up and it is well nigh impossible to clean them. With the POST you simply dip the nib in water, draw the plunger back and forth like a syringe or squirt-gun, and in less than five seconds it is clean and free for a perfect flow of any ink that may be handy. We will send, on request, a few of the many testimonials from noted men in various callings who have written merited words of praise for this most valuable invention. We can not offer the pen for sale for less than $3.00; but by special arrangement we are enabled to offer it free as a premium with Gleanings in any of the following combinations. All arrears, if any, must first be paid at $1.00 a year. Then for $3.00 we will send Gleanings for one year, or till Jan. 1, 1902 to two new names; for one year to yourself, and send you the pen free. For $2.50 we will send you the pen and Gleanings for one year, and to one new subscriber a year; for $2.50 we will send the pen and Gleanings for two years. If you have ever been disappointed with a fountain pen we assure you that you will not be with this one.

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Gleanings in Bee Culture & Good Housekeeping

A High-class Monthly Magazine, Conducted in
the Interests of the Higher Life of the Household.

GOOD HOUSEKEEPING occupies a position peculiarly its own, in that it is conducted in the interests of the higher life of the household, for it is devoted not only to practice, but to inspiration—to telling how the everyday affairs of life may be conducted, but always leading upward. It appeals to either sex, whether of young or advancing years, and not only helps but graitfies the physical, mental, and æsthetic natures of all its readers. The following topics and lines of research are samples of what GOOD HOUSEKEEPING is doing for the dwellers in the homes of America:

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Truth About Dishonest and Adulterated Food,
Famous Cooking Schools Described,
New Sources of Income,
Tasteful Home Furnishing, Illustrated,
"Good Housekeeping Babies,"
Women's Exchanges,
"The Best Way," in all Kinds of Housework,
The Latest Hygiene,
Household Economics,
Original Recipes from Famous Cooks and Cooking Teachers,
The Four-footed Cousins,
New Ideas in Fancy Work,
Changes and Tendencies in Home Life,
New Fashions and Their Wearers,
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A sample copy of GOOD HOUSEKEEPING will be sent to any address on receipt of eight cents in stamps, which should be sent to the publishers at Springfield, Mass., or Chicago, Ill. Remit by postoffice or express money order, check, draft, or registered letter, to

The A. I. Root Company, : : Medina, Ohio.

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We manufacture a full line of the latest

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Our motto is, "Perfect Goods and Prompt Shipment."

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Illustrated and fully described. Especially valuable to beginners for the information it contains. Send your address on a postal and get it NOW. Established 1884.

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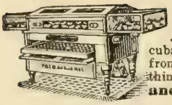

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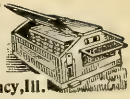

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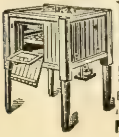
INCUBATORS THE CYPHERS.
One Style Only. OUR BEST.
Warranted to last **Ten Years** without repairs and to **out-hatch** during three trials any other incubator—bar none; **THIS OR YOUR MONEY BACK. Built for business—sold on honor.** 16-page illustrated circular and price list **FREE.** Poultry Manual and Catalogue No. 71 (160-pages, 8x11in.) entitled, "How to make money with Poultry and Incubators" sent postpaid for 15 cts. in stamps–worth dollars. Address nearest office.
CYPHERS INCUBATOR CO.,
Chicago, Ill. Wayland, N. Y. Boston, Mass.



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because they have the best system of regulating temperature and moisture.
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Hot Air or Hot Water. Money back if you want it. Absolutely safe. Durably built. Catalog for 2c.
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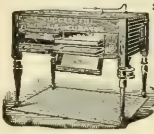

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are hatched by our incubators, and more of them than hens can hatch. Why? Because our regulator never fails to keep the **heat just right. Catalogue printed in 5 languages** gives full descriptions, illustrations and prices, and much information for poultry raisers. **Sent for 6 cents.**
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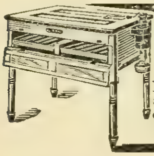

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Perfect in construction and action. Hatches every fertile egg. Write for catalogue to-day.
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Over 100 Styles, plain and ornamental. Build it yourself at the actual wholesale cost of the wire. Don't miss this
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Write for our Catalogue and convince yourself how easily and cheaply it can be done with a Duplex Machine.
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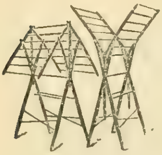

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in your own shop; easy to make, easy to sell. We do two-thirds the work, you get two-thirds of the money. Price of material, and full directions free. Exclusive territory. Address
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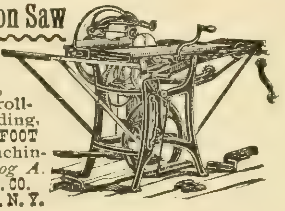

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For Ripping, Cross-cutting, Rabbeting, Mitering, Grooving, Gaining, Boring, Scroll-sawing, Edge-moulding, Beading. Full line **FOOT and HAND POWER** machinery. *Send for catalog A.*
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44 Water St., Seneca Fs., N. Y.

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HENS LAY BEST
—in fact they lay double the eggs winter and summer when fed **Green Cut Bone.**
Mann's New Bone Cutters
cut all hard and soft bones, meat, gristle, &c., fine, fast and without choking and run easy. Clover cut with our **Clover Cutters** helps wonderfully. Mann's Granite Crystal Grit and Feed Trays too. Catalogue FREE.
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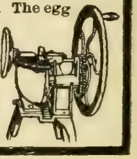

Hatch Chicks that Live.
Their vitality depends upon the egg. The egg depends upon the food. Cut bone makes eggs that have vitality. The easiest, most rapid cutter made is
Humphrey's Green Bone and Vegetable Cutter.
Your money back if dissatisfied. Send for our guarantee and book for keeping egg record.
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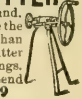

THE ADAM GREEN BONE CUTTER
and a flock of hens means **egg money** the year round. **Green Cut Bone** you know makes hens lay double the eggs winter and summer. This machine runs easier than any other because it is the only ball-bearing bone cutter made. It cuts bone quickly—shears it off in fine shavings. Can't choke; cleans itself; is strong and substantial. Send at once for our **free** illustrated catalogue No. **39**
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by using Ley's Poultry Condition Powders. Puts all fowls in a normal condition; destroys all disease germs; purifies the blood; is a tonic and nutrient Price 25 cts. a pk; 5 for $1.00. Ley's Thoroughbred Minorca's Eggs. $1.00 for 13 Also Thoroughbred Belgian Hares. **Geo. J. Ley, Florence, Cal.**

No Money in Advance
Our elegant **New Jewel** Drop-head Sewing Machine possessing all the latest improvements, high quality and thorough workmanship. Shipped direct at $12.50, the lowest price ever known. 30 days' free trial. Money refunded if not as represented. Guaranteed 20 years. All attachments free. 125,000 sold.
$40.00 Arlington for....$14.50
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Other Machines at $8.00, $9.00 and $10.50
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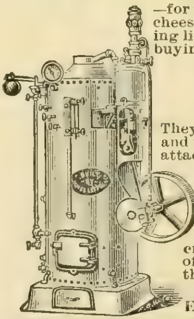

The Power Question
—for farm use, dairies, creameries, cheese factories—anything requiring light power, is best settled by buying one of these
LEFFEL ENGINES.
They are made in both horizontal and upright pattern, with engine attached to boilers. Being very simple and direct in construction they are economic of fuel and **great developers of power.** Best for **cutting and grinding feed, sawing wood, pumping water, separating cream, churning, &c.** Made of the best material throughout they are durable and long lived.
Send stamp for our **Book on Engines and Power.**
JAMES LEFFEL & CO., Box 89, Springfield, O.

In writing mention Gleanings.

Incubators on Trial

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We will ship a **Perfected Von Culin Incubator** on trial, guaranteed to give Satisfaction. Control of heat and moisture is perfect. Non-explosive metal lamps used. Everything practical, and the successful result of 25 years' experience. We make brooders, etc. Catalog free.

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The W. T. Falconer Manufacturing Co.,
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We Pay the Freight.

INVESTIGATE BEFORE YOU BUY.

We want our customers to be perfectly satisfied before they spend their money. Investigate the claims of **all** incubators and then decide. We believe you will find that the

SURE HATCH INCUBATORS

AND COMMON SENSE FOLDING BROODERS are giving better satisfaction than any other made. It's because they are so simple, sensible and **sure**. They are built for busy people, who haven't time to fuss and bother. **Our catalogue is FREE.** We don't ask you to pay for it. Isn't it worth examining?

SURE HATCH INCUBATOR COMPANY, CLAY CENTER, NEBRASKA.

In writing advertisers, please mention Gleanings.

Standard Bred

White Plymouth Rocks.

Only a few fine cockerels left. Write for particulars.

ADDIE S. MILLER,
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W. HAHMAN, Box 3, ALTOONA, PA.

Belgian Hares

I have some fine hares for sale at reasonable prices.

J. F. Moore, : Tiffin, Ohio.

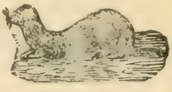
Belgian or German Hares,

High-class Fancy Pigeons, and Buff, Black, and White Cochin Bantams. Enclose 4c in stamps for catalog. Satisfaction guaranteed or your money refunded, less the express charges. Address
MICHAEL K. BERGEY, Souderton, Montgomery Co., Pa.

Belgian-hare Guide and Directory of Breeders. Illustrated, practical, complete. 25 cts. Inland Poultry Journal Co., Indianapolis, Ind.

1200 FERRETS FOR SALE. Small, medium, and large sized; some trained. **First-class** stock. New price list free.

N. A. KNAPP.
Rochester, Lorain County, Ohio.



SPECIAL NOTICES BY BUSINESS MANAGER

MAPLE SYRUP.

We have a choice lot of maple syrup in gallon cans, which we offer at $1.00 per gallon, 10 gallons, $9.00. This is cheaper than honey, and our supply ought not to last long at these prices. We have no maple sugar at present to offer at any price.

HONEY.

We have very little comb honey to offer at present writing. What little we secure goes out about as fast as it comes in, at good prices. We could sell a lot more of fancy white honey if we could secure it.

We are also having a good trade in extracted. We bought a carload of basswood honey in barrels in Wisconsin, of which we have already sold a half. We have also a car of amber California honey on the way here, of which about half is sold for delivery on arrival. We shall be pleased to hear from any desiring honey.

PRICES ON SUPPLIES FOR NEXT SEASON.

We have decided to continue the prices in effect last season on hives and sections for the coming season, or until conditions warrant a further change. While the cost of lumber would warrant the advance proposed two months ago, we have concluded not to make it, but to be content with a narrower margin of profit. Bee-keepers have had two quite unfavorable years, which we have also felt in a reduced demand for supplies. We trust that, with the high prices prevailing for honey, and the favorable outlook for a clover crop the coming year, the demand will increase, and we shall be rewarded by increased business at the old price. The wax market is such that we shall have to advance comb foundation 2 cents a pound above last season's price. We are able to make lower prices on some other items. The changes in price from last season's catalog are given in the following tables. There may be a few other unimportant changes before our 1901 catalog is issued.

Paint for hives, price per gal., $1.85; half-gal., 95c; qt , 50c; pint, 30c.

TINNED WIRE.—Page 13.

Sizes furnished.	Price each	Price doz.	Post. each.
¾-oz. spools No. 30 tinned wire..........	$ 03	$ 25	02
¼-lb. spools No. 30 tinned wire..........	10	1 00	06
½-lb. spools No. 30 tinned wire..........	15	1 65	10
1 - lb. spools No. 30 tinned wire..........	25	2 75	18
5-lb. coils No. 30 tinned wire..............	80		

COMB FOUNDATION —Page 16.

Name of Grade.	Size, and sheets per pound.		In lots of			
			1 lb	5	10	25
Medium brood........	6¼x15¾	9 to 10	50	48	46	45
Light brood	6¼x15¾	11 to 12	52	50	48	47
Thin super..............	4⅝x14½	25	57	55	53	52
Extra thin..............	4⅝x14½	29	60	58	56	55

Root zinc strips, 1 row holes, ¾x18 to 19⅛, per 100, $1.00.
Tinker zinc strips, 2 rows holes, 13/16x18 to 20, 100, $1.50.
Cut pieces of Root zinc, 10c a ft.; Tinker zinc, 15c a ft.
Root zinc sheets, 28x96 inches, each $1.50.
Tinker zinc sheets, 24x40 inches, each 75c.

PRICE LIST OF HONEY BOARDS.—Page 21.

No.	R indicates Root zinc. T indicates Tinker zinc.	Price of 10.	Weight of 10.
R 1	10-frame unbound zinc, 14x19⅛......	$1 50	9 lbs.
T 1	10-frame unbound zinc, 14x19⅛......	2 00	9 lbs.
R11	8-frame unbound zinc, 12x19⅛......	1 30	8 lbs.
T11	8-frame unbound zinc, 12x19⅛......	1 80	8 lbs.
T 9	8-frame wood-zinc, 13⅞x20..........	2 00	13 lbs.
T10	10-frame wood-zinc, 16x20.............	2 20	14 lbs.
R12	10-frame wood-bound zinc, 16x20...	1 80	11 lbs.
T12	10-frame wood-bound zinc, 16x20...	2 20	11 lbs.
R13	8-frame wood-bound zinc, 13⅞x20	1 60	10 lbs.
T13	8-frame wood-bound zinc, 13⅞x20	2 00	10 lbs.

Manum's swarm-catcher, with pole, $1.10.
" " without pole, 80c.
Double-pointed tacks, 20c per lb.; 10 lbs., $1.80.
Wire-cloth staples, 20c per lb.
Crate-staples, 15c per lb.
End-space staples, 15c per lb.
Paraffine wax, 20c per lb.; 10 or 12 lb. cakes, 16c.

Special Notices by A. I. Root.

GOSPEL HYMNS.

The Gospel Hymns offered on p. 904 will be sold, till closed out, at one-third less the advertised prices.

DAVIS WAX BEANS.

We have just received from Eugene Davis, the originator of the wax beans, his entire crop for the past season. So far as I can tell at present writing, the prices will be the same as last season: Pint, 15 cts.; quart, 25 cts.; 4 quarts, 90 cts.; peck, $1.75. I do not see why it is somebody does not go to work and grow beans for seed, and do one of two things—either get rich or bring the prices down a notch or two.

THE NEW BUSH BEAN, THE PRIZE WINNER—SEE PAGE 930.

This new extra-early bush bean, we understand from F. B. Mills, has been named the Prize Winner. It is claimed they have yielded as high as 40 bushels per acre. If they are always loaded with pods as ours have been, I can readily believe it. We seem to be the first to have demonstrated that two crops can be grown in a season on the same ground—that is. in our locality. We are now prepared to furnish them in five-cent packets, and will be able to make a price on quantities later.

JAPANESE BUCKWHEAT—OLD PRICES ONCE MORE.

This is good news to those who want to buy, but not so good for those who want to sell. We can now furnish a trial packet of 4 ounces, postpaid by mail, for 5 cts ; 1 lb. by mail, postpaid, 15 cts.; 1 peck, by freight, 25 cts.; ½ bushel, 45 cts.; bushel, 85; 2-bushel bag, $1.50. The above prices include bag to ship in. Ten or more bushels, purchaser paying for the sacks, 70 cts. per bushel. Some of the buckwheat that we offer at the above prices cost us 90 cts. spot cash, *bags extra*. But this is a part of the seed business. Prices may go up again, so you had better send your order now for what you want next year, and then you will be sure to have it when you need it.

PRICES OF ALSIKE CLOVER AND OTHER SEEDS FOR ANOTHER SEASON.

The prices are good on alsike, beans, etc., for the *grower*, but a little bad for the *purchaser*. Never mind. More of us will have to go to growing seeds again. The new crop of alsike seems to be scarce. We have, however, secured 13 bushels of very nice new seed, but we can not make prices less than 1 lb., by mail, 30 cts.; by express or freight, 1 lb., 20 cts.; peck, $2 25; ½ bushel, $4.25; bushel, $8 00. White Dutch clover, same price as alsike. We can now furnish sweet clover at our old prices—1 lb. by mail, 18 cts.; by express or freight, 10 lbs. at 6 cts. per lb.; 100 lbs., 5 cts. per lb. Prices may be higher late in the season, just as it was last season; therefore if you want any, it might be a safe thing to buy it now.

Beans of all kinds are going to be away up again; but we have not received quotations sufficient yet to give the price. All other seeds will run about as last year, so far as we can tell.

THE NEW SCAB-PROOF RUSSET POTATO.

We have just received from Wilbur Fenn, the grower, 100 bushels of carefully selected new Russet potatoes for seed. After having seen the potato growing in Michigan and in different parts of Ohio, I am glad to be able to say that it is practically scab-proof. I have not found a bit of scab in field culture, and only a very little in an old garden badly infested with scab. I confess I never expected to find a potato so nearly perfect in this respect as the Russet. Another thing, the quality—at least the quality of those grown by Wilbur Fenn—is about equal to any potato we have—not even excepting the Freeman, for either baking or boiling. They are snowy white, and dry and floury. You may remember I offered $1000 for a single barrel of potatoes that were scab-proof, and equal to some of our best in other respects. The Russets would bring the $1000 fairly and squarely if the yield were only equal to Carman No. 3 or the Rural New-Yorker and other standard varieties. On Mr. Fenn's farm he finds the yield about equal to any other variety; but it has never been so good on our grounds, and is not in Michigan. Just one thing more in its favor, and something I confess is a little queer Nearly half of our Carman No. 3 this year were ruined in looks by the wire worms. The Russets, in rows side by side of the Carmans, were not touched by the wire worms at all. If anybody can explain this I wish he would write me. Now, notwithstanding all these good qualities, we offer the new Russet for only $2.50 a barrel. In many localities they are worth that for table use. If you want a real nice table potato, you had better order a barrel for a sample. For prices on smaller quantities, and prices on our other kinds of potatoes, see last issue, or send for our new price list of potatoes. We will ship potatoes any time during December to any point not further north than we are, at our risk of freezing; or we will set aside all potatoes sold, and keep them in an excellent cellar and ship them in good order after April 1. If you have not the very best kind of cellar you had better let us keep them for you. We have done it for years, without a failure, and we can keep them absolutely without sprouting until April 1.

Our Advertising.

Egg Record and Timely Notes, Free.

We are pleased to call attention to the *Egg Record* sent out by Humphrey & Sons, Box 51, Joliet, Ill. We have received a copy, and should say the book contains as much information under Timely Notes as many of the poultry books offered for sale. We advise all our readers interested in poultry to send for a copy. See their advertisement on page 936, this issue. Please mention Gleanings when you write them.

CONVENTION NOTICE.

THE MICHIGAN STATE BEE-KEEPERS' CONVENTION, DEC. 26, 27.

As we go to press, nothing further has been received from Pres. Hilton, except the following private letter:

> Our meeting will be held Dec. 26, 27. commencing at two o'clock the 26th, and I want you to come direct to my house and go up with me, either on the evening train or the morning train to Traverse City. I am figuring on a very pretty and novel badge. As soon as I get them I will send you one. I have done nothing about a program, and may not. We have been having splendid meetings without any set program, and I am not sure but it is the best plan. GEO. E. HILTON.

I quite agree with the suggestions above. We do not want long essays, but we do want friendly talks, and we want to hear something from everybody in regard to the practical questions that need solving for that locality. I for one want to get acquainted with every bee-keeper in that vicinity. A. I. R.

A bee-keepers' institute is to be held in the town board's room, in Ellicott Hall, Batavia, N. Y., Dec. 12. W. Z. Hutchinson, of Flint, Mich., editor of the *Bee-keepers' Review*, is expected to be present and give an address. It is expected also that E. R. Root, of *Gleanings*, will be present. Preceding the institute will be held the annual business meeting and election of officers of the Genesee Co. Bee-keepers' Society, at 10 A. M.

F. H. FARGO, Pres.
O. J. GARDNER, Sec.

A bee-keepers' institute under the auspices of the Bureau of Farmers' Institutes, will be held with the fourth semi-annual meeting of the Cayuga Co. Bee-keepers' Society, in the Board of Trade rooms at Auburn, N. Y., Dec. 17. W. Z. Hutchinson, of Flint, Mich., will be present and deliver an address and take part in the proceedings. It is expected that E. R. Root, of Medina, Ohio, will also be present.

J. W. PIERSON, Sec.

FOR SALE.—Poultry, fruit, and bee ranch at Port Angeles, Wash. Finest opportunity in the world for the right man. Write now. GEO. V. SMITH.

Poultry Book Free. (224 pgs. illust'd) to any one sending us 25 cts. for a year's subscription to our paper. INLAND POULTRY JOURNAL, Indianapolis, Ind.

A Honey Market. Don't think that your crop is too large or too small to interest us. We have bought and sold five carloads already this season, and want more. We pay spot cash. Address, giving quantity, quality, and price
Thos. C. Stanley & Son, Fairfield, Ill.

WANTED.—Comb and extracted honey. State price kind, and quantity. R. A. BURNETT & Co.,
163 South Water St., Chicago, Ill.

WANTED.—To buy for cash, comb and extracted honey, either white or buckwheat.
C. B. HOWARD, Romulus, N. Y.

WANTED.—Comb and extracted honey. State price, kind, and quantity; also rate of freight to Boston.
BLAKE, SCOTT & LEE,
31 and 33 Commercial St., Boston, Mass

FOR SALE.—1000 lbs. extracted honey in one-gallon tin cans, at 8½ cts., f. o. b. here. Sample free.
R. H. BAILEY, Ausable Forks, N. Y.

FOR SALE.—20,000 lbs. extracted honey from alfalfa, and light amber from Rocky Mountain bee-plant. Two cans, 120 lbs. net, $8 40; also 5 and 10 lb pails. In ordering state if you want white or amber.
M. P. RHOADS, Las Animas, Col.

FOR SALE.—Extracted alfalfa honey, 9½c per lb.; light amber extracted, 8½c; in cans. Sample, 5c.
I. J. STRINGHAM, 105 Park Place, New York.

FOR SALE.—116 kegs of buckwheat and goldenrod honey of fine quality. Kegs contain about 164 lbs. each. E. W. & F. C. ALEXANDER,
Delanson, Schenectady Co., N. Y.

FOR SALE.—White alfalfa honey at $8.50 per case of ten gallons, weighing 122 pounds net. Buyer to pay freight charges. H. L. WEEMS, Lemoore, Cal

FOR SALE.—Choice alfalfa honey. Two cans, 120 lbs. net, whitest, $9.00; tinted, partly from other bloom, $8.40. Also small cans.
THE ARKANSAS VALLEY APIARIES,
OLIVER FOSTER, Prop., Las Animas, Bent Co., Colo.

Wants and Exchange.

Notices will be inserted under this head at 10c per line You must SAY you want your ad. in this department, or we will not be responsible for any error. You can have the notice as many lines as you please; but all over ten lines will cost you according to our regular rates. We cannot be responsible for dissatisfaction arising from these "swaps."

WANTED.—To exchange Bates & Edsmond gasoline engine—1½ h.-p., for lathe and foot-power machinery of all kinds. ROBT. B. GEDYE, LaSalle, Ill.

WANTED.—To exchange bees in Simplicity portico hives for pullets of either Brown Leghorn or B. P. Rocks. LUTHER PURDY, Killbuck, Ohio.

WANTED. — To exchange buckwheat extracted honey as cash, for 2d-hand hives—Simplicity or 10-frame Dovetailed only. Have your neighbors got any, or store combs? W. L. COGGSHALL,
West Groton, Tompkins Co., N. Y.

WANTED.—To exchange a good new house and an acre and a half of land and a small apiary, for half cash and half labor on a fruit-ranch. A good chance for a poor man with a family to get a home in California, where good help is in great demand, especially during the fruit season. For particulars address E. B. BEECHER, Auburn, Placer Co., Calif.

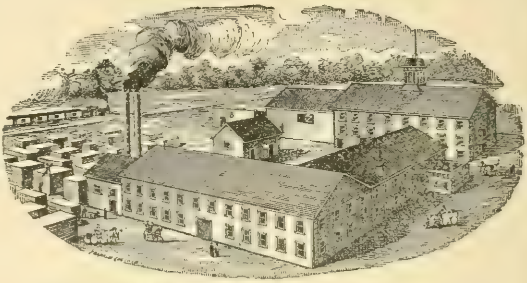
WANTED. — To exchange two incubators, Mann bone-grinder, Remington rifle, shotgun, Iver Johnson revolver for any thing useful. Mention GLEANINGS; inclose stamp.
WILLIAMS BROS., Greene, N. Y.

WANTED.—To exchange 20 acres of land, on a nice lake, 2 miles from Winter Haven, Polk Co., Fla., for bee supplies, musical instruments, nursery stock, or any thing I can use on a Florida farm. Write.
I. T. SHUMARD, Ft. Meade, Fla.

BEE-SUPPLIES!

We have the best-equipped factory in the West. Capacity, one carload a day; and carry the largest stock and greatest variety of every thing needed in the apiary, assuring BEST goods at the LOWEST prices, and prompt shipment. We want every bee-keeper to have our FREE ILLUSTRATED CATALOG, and read description of Alternating Hives, Ferguson Supers, etc. *Write at once for a catalog.*

We also manufacture TANKS of either wood or galvanized steel, all sizes, any form, and for all purposes. Price list free.



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Don't Buy Supplies

Until you see my 40th annual catalog. A full line of hives and fixtures best adapted to our New England climate. Also best brands of **Comb Foundation and Section-boxes.** I have also made arrangements to keep quite a general stock of

A. I. Root Co.'s Goods at Their Prices.

Parties desiring these goods can get them of me, and **Save Freight Charges.** Bees, Queens, and Nucleus Colonies from the **very best strains** in America. A 40-page illustrated catalog free. Address

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Lyonsville, Mass.

W. O. VICTOR,

QUEEN SPECIALIST,

WHARTON, TEX.

I have as good stock as there is in the United States, so says The A. I. Root Co. Besides having selected choice queens from my own stock from time to time during the entire season, I have bought select queens from a number of breeders of high repute.

In addition to these I have a dozen imported queens due direct from Italy any day.

To this, add

AN EXTRA SELECT TESTED DAUGHTER OF THE A. I. ROOT COMPANY'S $200.00 RED-CLOVER QUEEN

whose bees have a reach of 21 hundredths of an inch, and three select queens of Moore's long-tongue strain, and I feel that my stock is at the top of the present development of superiority. Untested queen, $1.00; tested queen, $1.50; select tested queen, $2.50 to $5.00. Root's goods at Root's prices—plus carload freight.

SECTIONS AT A BARGAIN.

We have 50 M 3⅝x5x1½ in. plain sections, and as our call for these is light we will sacrifice them if sold now. They are No. 1. Price will surprise you; write for price.

I. J. Stringham, 105 Park Place, N. Y.

Honey Column.

GRADING RULES.

FANCY.—All sections to be well filled, combs straight, firmly attached to all four sides, the combs unsoiled by travel-stain, or otherwise; all the cells sealed except an occasional cell; the outside surface of the wood well scraped of propolis.

A No. 1.—All sections well filled except the row of cells next to the wood; combs straight; one-eighth part of comb surface soiled, or the entire surface slightly soiled; the outside surface of the wood well scraped of propolis.

No. 1.—All sections well filled except the row of cells next to the wood; combs comparatively even; one-eighth part of comb surface soiled; or the entire surface slightly soiled.

No. 2.—Three-fourths of the total surface must be filled and sealed.

No. 3.—Must weigh at least half as much as a full-weight section.

In addition to this the honey is to be classified according to color, using the terms white, amber, and dark; that is, there will be "fancy white." "No. 1 dark," etc.

CITY MARKETS.

CHICAGO.—The demand has fallen off very much of late; but prices have not declined to any great degree from those prevailing for the past sixty days; but any pressure to sell would cause a decline. Fancy white comb, 16; No. 1, 15; amber and travel-stained, white, 13@14; dark and buckwheat, 10@11. Extracted white, 7½@8; amber, 7@7¼; buckwheat and other dark grades, 6@6½. Beeswax, 28.

R. A. BURNETT & CO.,
Dec. 7. 163 South Water St., Chicago, Ill.

DETROIT.—Fancy white comb, 15@16; No. 1, 13@14; dark and amber, 10@12. Extracted white, 8@8½; dark and amber, 6@7. Beeswax, 26@28.

Dec. 10. M. H. HUNT & SON, Bell Branch, Mich.

BOSTON.—Our honey market is very strong at the following prices, with supplies very light: Fancy, 1-lb. cartons, 17; A No. 1, 15@16; No. 1, 15; No. 2, 12@13. Extracted, 7½@8½, according to quality. We can see no reason why these prices should not be well maintained right through the season, and advise shipping. The higher prices naturally curtail consumption somewhat.

BLAKE, SCOTT & LEE,
Dec. 7. 31, 33 Commercial St., Boston, Mass.

SCHENECTADY.—There has been quite a brisk demand for honey during the past few days. Grocers have closed out their first supply, and are buying now for holiday trade, having to take up with buckwheat, as the supply of white is exhausted We quote fancy white, 16@17; fair to good, 14@15; buckwheat, 11@12. Have sold some considerable dark extracted, but have had to shade quoted prices to do it.

CHAS. MCCULLOCH,
Dec 8. Schenectady, N. Y.

NEW YORK.—The receipt of comb honey at present is very light, although there is a good demand for all grades We quote: Fancy white comb, 15@16; No. 1 white, 13@14; No. 2 white, 11½@12½; buckwheat, 10@11. There is no demand for buckwheat extracted as yet. Some sales are reported at 5½@5¾. Beeswax, 27@28.

FRANCIS H. LEGGETT & CO.,
Franklin, West Broadway, and Varick Sts.,
Dec. 8. New York City.

MILWAUKEE.—There is nothing startling of any special interest in the honey trade on this market. The supply seems moderate and yet there seems to be enough to meet the current consumptive demand. The offerings and receipts are more liberal of late, yet any shippers who may have fancy section honey we can safely encourage them to ship to us. We quote: Fancy 1 lb. section, 16@18; A No. 1, 16@17; No. 1, 15@16; amber, 13@15. Extracted in barrels, cans, pails, and kegs, white, 8½@9½; amber, 7½@8 Beeswax, 25@28.

Dec. 7. A. V. BISHOP & CO.

ALBANY.—Honey market quiet and steady, with light receipts. We do not look for any change in prices now, as crop is nearly all in, and stock light. White comb, 17; No. 1, 16; No. 2, 15; mixed, 13@14; buckwheat, 13@13½. Extracted, white, 8@8½; mixed, 7@7½; buckwheat, 6. Extracted honey slow, and prices are nominal, or what we are asking at present.

MACDOUGAL & CO.,
Successors to CHAS. MCCULLOCH & CO.,
Dec. 10. Albany, N. Y.

PHILADELPHIA.—The high-water mark has been reached on comb honey, and the fancy lots all cleaned up; there is lots of No. 1 and No. 2 on the market. We quote No. 1, 14@15; No. 2, 13. Extracted white, 8; amber, 7. Beeswax, 28. We are producers of honey—do not handle on commission.

WM. A. SELSER,
Dec. 8. 10 Vine St., Philadelphia, Pa.

WANTED.—Comb and extracted honey. State price, kind, and quantity.

R. A. BURNETT & CO.,
163 South Water St., Chicago, Ill.

WANTED.—Comb and extracted honey. State price, kind, and quantity; also rate of freight to Boston.

BLAKE, SCOTT & LEE,
31 and 33 Commercial St., Boston, Mass.

WANTED.—152 lbs. honey in well-filled combs (Dovetailed hives), to winter bees upon.

J. B. ENOS, M. D., Charleroi, Pa.

This party is all right.—The A. I. Root Co.

FOR SALE.—20,000 lbs. extracted honey from alfalfa, and light amber from Rocky Mountain bee-plant. Two cans, 120 lbs. net, $8 40; also 5 and 10 lb. pails. In ordering state if you want white or amber.

M. P. RHOADS, Las Animas, Col.

FOR SALE.—Extracted alfalfa honey, 9½c per lb.; light amber extracted, 8½c; in cans. Sample, 5c.

I. J. STRINGHAM, 105 Park Place, New York.

FOR SALE.—White alfalfa honey at $8.50 per case of ten gallons, weighing 122 pounds net. Buyer to pay freight charges.

H. L. WEEMS, Lemoore, Cal.

FOR SALE.—Choice alfalfa honey. Two cans, 120 lbs. net, whitest, $9.00; tinted, partly from other bloom, $8.40. Also small cans.

THE ARKANSAS VALLEY APIARIES,
OLIVER FOSTER, Prop., Las Animas, Bent Co., Colo.

FOR SALE. — Five tons of extracted buckwheat honey.

N. L. STEVENS, Venice, N. Y.

FOR SALE.—Buckwheat extracted honey, in large or small quantities. Write for prices.

C. B. HOWARD, Romulus, N. Y.

FOR SALE.—Extracted honey from alfalfa; 60-lb. cans at 7 cts., and smaller cans.

D. S. JENKINS, Las Animas, Colo.

FOR SALE.—3000 lbs. extracted alfalfa honey; 75-lb. cans, 6c per lb.; 12-lb. (1 gal.) cans, 10 in a box, 7c per lb.; $8.40 per box. This month, a bargain.

W. C. GATHRIGHT, Dona Ana, New Mexico.

A Honey Market. Don't think that your crop is too large or too small to interest us. We have bought and sold five carloads already this season, and want more. We pay spot cash. Address, giving quantity, quality, and price.
Thos. C. Stanley & Son, Fairfield, Ill.

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Magazines and Post Fountain Pen to the amount of $9.00 for $5.00.

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Review of Reviews (new)	2 50
Success	1 00
McClure's	1 00
Pearson's	1 00
Post Fountain Pen	2 50
	$9 00

All of these sent to one or separate addresses one year for **$5.00.**

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" " " Pearson's, and Cosmopolitan	5 50	3 25
" Success, McClure's, and Cosmopolitan	4 00	2 75
" " Pearson's, and McClure's	4 00	2 75
" " Cosmopolitan, and Pearson's	4 00	2 50
" " and Cosmopolitan	3 00	2 00
" " and Pearson's	3 00	2 00
" " and McClure's	3 00	2 25
" " and Munsey's	3 00	2 25
" and Success	2 00	1 50
" and Cosmopolitan	2 00	1 50
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Poultry Monthly.	Mich. "	Nat'l Stockman and Farmer		*Orders for these three must be for new subscribers.*	
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1. Gleanings in Bee Culture, one year, $1.00.
2. If you want only one additional paper, add the price found in the top of the column in which that paper appears. For instance: Gleanings, and Success (2d col.) will cost you $1.50.
3. If you want several papers in addition to Gleanings, each one may be had at the price named at the top of the column. For instance: Gleanings, Success (2nd col.) and Rural New-Yorker (3rd col.), will cost you $2.25.
4. You may select as many papers from each column as you wish.
5. Every order sent us must include Gleanings.

CONDITIONS.—Offers subject to withdrawal Dec. 31, 1900. Subscriptions to the Review of Reviews, Youth's Companion, and Country Gentleman must be strictly new. New subscriptions sent for Success, Youth's Companion, or Gleanings will receive the balance of this year free. Neither the Review of Reviews or Post Fountain Pen will be sent in any combination amounting to less than $2.50.

CHRISTMAS PRESENTS.—We will send all papers or pen to one or separate addresses as desired. In this way you can easily make desirable Christmas Presents.

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$1.00 per year, together with a premium untested queen, to new subscribers.

You can send your subscription now, and get the queen-bee when you want her.

Bee-keepers' Supplies.

THE JENNIE ATCHLEY CO.,
Beeville, Bee Co., Texas.

For Sale. Forty-five colonies of bees in 10-frame hives, with honey enough for winter; 55 extracting-supers, with frames and drawn combs all wired; 33 empty hives; 36 supers with sections and foundation; 30 queen-excluding honey-boards; four-frame Excelsior extractor. In good basswood locality. All for $150.00. One mile from Homer, Nebraska.
JAS. P. GOODWIN, Homer, Neb.

Wants and Exchange.

Notices will be inserted under this head at 10c per line. You must SAY you want your ad in this department, or we will not be responsible for any error. You can have the notice as many lines as you please; but all over ten lines will cost you according to our regular rates. We cannot be responsible for dissatisfaction arising from these "swaps."

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West Groton, Tompkins Co., N Y.

WANTED. To exchange a good new house and an acre and a half of land and a small apiary, for half cash and half labor on a fruit-ranch. A good chance for a poor man with a family to get a home in California, where good help is in great demand, especially during the fruit season. For particulars address E. B. BEECHER, Auburn, Placer Co., Calif.

WANTED.—To dispose of complete small job-printing outfit worth about $150 00. Correspondence solicited. Address C. A. STEBBINS,
Broad Creek, Princess Anne Co., Va.

WANTED.—10 colonies of Italian bees in Danz. hives. Correspondence solicited.
RANDOLPH CUYLER, Branchville, Prince George Co., Md.

WANTED —A position with a good bee-keeper, or will take entire charge for you; 15 years' experience. Good reference to give.
J. E. HENDERSON, Elm Grove, Ohio Co., W Va.

WANTED.—At once two men, one with family, one single, to work on farm by the year. Would like one of the men to assist in apiary of 100 hives of bees. Tenant house for family. Will rent the bees on shares and furnish work on farm the rest of the year.
L. D. GALE, Stedman, N. Y.

WANTED.—$500 00 worth of bee-fixings and bees, with freight prepaid to Essex, Conn. For same will give warrantee deed of a property, about three acres, barn, some over 20 fine apple-trees, and a new house, not quite finished, in Washington, Conn., insured for $650 for two years longer My price, $1200; but I want bee-goods, and now. Or an improved lot in Keuka, Fla.; price $200. If I can get a stock of bees and fixings, with freight prepaid to Essex, Conn., will accept $100 worth of same. DR. BALL, Essex, Conn.

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Each number consists of 96 pages filled to overflowing with original and interesting reading, including many handsome and striking illustrations.

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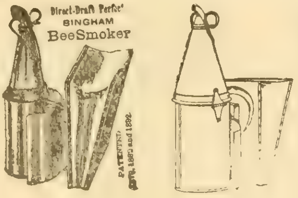

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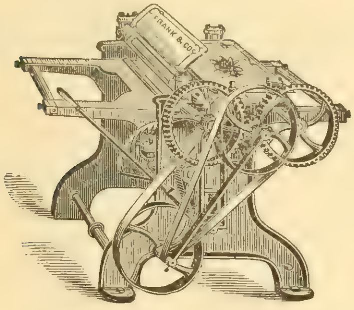

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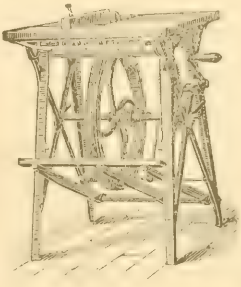
Write us for prices on Groceries, Nails, Fence Wire, etc.

Our catalog of Bee Supplies will not be ready until the first of the year; but send on your names if you wish it mailed when ready.



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Wm. A. Selser, Honey Expert,

Office of the A. I. Root Company.

10 Vine St., Philadelphia, Pa.

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has been a feature of the AMERICAN BEE JOURNAL for some time. Mr. A. I. Root said, on page 882 of GLEANINGS, that "Dadant's account of his trip through Switzerland alone is worth almost the subscription price for an entire year, to say nothing of the report of Chicago Convention."

* * *

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To NEW subscribers who send us $1.00 we will send the Bee Journal for 16 months, beginning with the Chicago convention report, and continuing to the end of next year (1901). This is indeed a bargain. You ought to have the weekly American Bee Journal. Sample copy free. Address

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GLEANINGS IN BEE CULTURE

A Journal devoted to Bees and Honey and Home Interests.

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STRAY STRAWS FROM DR C. C. MILLER

Bees begin work earlier in hives facing east, but they work later in hives facing west.

When a queen is introduced, if the bees are in such a state of surprise as to ask, "Where am I?" the queen is always accepted; but never when the bees are in condition to ask the queen, "Who are you?"—*Bienen-Vater*. Wonder if there isn't a good deal in that. [I guess that is so.—Ed.]

Some years ago there was a warm discussion in this country as to whether healthy bees voided their feces in a solid or liquid condition. Now the discussion is on in Europe. Editor Gerstung takes the position that both may be correct, the age of bees and other conditions making the difference.

You ask, Mr. Editor, p. 907, that I swap you two of those ragged covers for two new ones, so you may search for evidence of women having nailed them. I'd like to do that, but I don't like to break the set, and would rather have the whole fifty alike. But you can find out whether women nailed them by inquiring at Medina, where they were nailed.

W. E. Curtiss, the noted correspondent of the Chicago *Record*, has been looking up the book business. "That the Bible is the most popular selling book" is the verdict he gets from the bookstores and the big department stores. One of the latter said, "No, we do not sell them in large lots. We sell only one copy at a time, as a rule. Our average the year round will run from 125 to 150 a day. Neither David Harum nor Trilby nor any other story has touched the Bible as a seller."

Stenog springs a new idea, p. 909. At present it is only the second crop of red clover that is a seed crop, because there are not bumble-bees enough to fertilize the first crop. When hive bees get their tongues stretched, *the first crop will be a seed crop*. That may or may not be a desirable thing for farmers, but here's another thought that has possibilities in it, for bee-keeping at least: The first crop being left entirely to the hive bees, *only* blossoms with short enough tubes will be fertilized, and sowings from the first crop will soon make short tubes permanent. Whoop up the long tongues, Ernest!

"I do not understand how fasting for only 30 minutes on the part of the queen should induce a friendly behavior on the part of the bees," quoth ye editor, p. 913. A hungry queen behaves differently, and will that not affect the behavior of the bees? Whether you understand it or not, I think you'd believe in it if you'd try it for two or three years as I have done. [I believe in fasting on the part of human beings, but I should not suppose it would make very much difference with a queen-bee. You may be right, however. —Ed.]

Pulverized sugar is better for Good candy than granulated, but it costs nearly twice as much at the groceries, although the wholesale price is nearly the same. *How much* better is pulverized than granulated for Good candy? [Yes, pulverized sugar is far better than granulated, for making Good candy. The last named is like so much sand held together by honey, while the former welds together in a homogeneous dough. Granulated-sugar candy is apt to waste, in that the granules rattle down, either out of the cages or between the brood-combs. The bees will then tote these particles out of the entrance as so much useless rubbish.—Ed.]

In a report of the exhibit at the Paris show, the *Revue Internationale* says: "The Danzy hive passes for the most suitable of all hives for the production of comb honey." If the worthy editor of the *Revue* were to visit this country he might be surprised to find that it is by no means the great mass of comb-honey producers that thus esteem the Danzy. [The same thing might have been said during the first two or three years of its introduction, of the Langstroth hive, the extractor, and, in fact, of any valuable and recognized invention which is to-day used almost universally. The Danzenbaker hive must not be judged by the *number now in use*, but by the *progress* it has made since the date of its introduction. Next to the Dovetailed hive, it has made as rapid strides as any hive we have ever put out.—Ed.]

A FIXED STRAIN of bees is very desirable for the sake of continuing good qualities without change. But the "fixed strain" idea may be worked too hard when it comes to the matter of improvement. With a strain so fixed that there is no possibility of variation, there is *no possibility of improvement.* Continuation of good traits comes from fixedness. Improvement of traits comes, not from fixedness, but from variation. The trouble with a cross is that its characteristics are not fixed, but that does not argue against the *possibility* of greater improvement in the cross, and then it is the province of careful breeding to make that improvement fixed. I am an advocate of pure stock; but if I had the purest and best Italians on earth, and a cross that would beat them in storing by 50 per cent, I'd drop the purity and try to fix that 50 per cent. [Yes, but I believe you will find that crosses would have a very strong tendency to sport back to the original stock, either one of which would be poorer than the mixture.—ED.]

THE *American Bee-keeper*, speaking of the pasteboard-candy mode of introduction, says: "At this writing numerous reports are coming in which show that failure more often results through the use of the new plan than with the older method." Isn't your verdict a bit hasty, Bro. Hill? In the few hundred cases that have come within my knowledge there have been rare exceptions when the bees did not remove the pasteboard, but that is the only objection. As to the rest, there is undoubtedly additional security from the longer time it takes to remove the pasteboard; and, without being sure of it, my present notion is that fewer failures will occur with the pasteboard. [A good deal depends on the kind of pasteboard and the manner it is put in over the candy. The first cages we sent out had the strips cut too wide. We now cut them much narrower, so that the candy is exposed on both sides to the bees as well as through the perforations in the center. It is true, there have been failures by this plan of introduction; but the failures have been due, I think, in all cases, to too much pasteboard or to the wrong kind of pasteboard—ED.]

YOU ASK, Mr. Editor, p. 869, if I am sure the inverting of the syrup will be as thoroughly done by the bees when water is poured on the sugar in the feeder as when the two are thoroughly mixed beforehand in the extractor. No, I'm not sure, but I think so. Please disabuse your mind of the idea that the mixing cuts any figure in the case. When a bee takes a particle of sugar and a particle of water, those two particles are as thoroughly mixed as if you had reeled them an hour in the extractor. The only question is as to the thinness of the syrup. The thinner, the better chance for inversion. I think more water is used when the water is merely poured on the sugar; in other words, my plan gives a thinner syrup, and, hence, better inversion. But it should be said that, unless the feeding be done early enough, my plan is not so good as yours just because my syrup takes more time to evaporate. And if *very* late, a thicker syrup than yours must be used. [You may be right, but it strikes me the bees can handle a syrup of the same general consistency better than they handle a mixture all the way from almost clear water, away up to a thick syrup. The last named will not be inverted as well as the medium thin syrup. Take it all in all, I suspect you will get good results by your plan, and the method to be used is more a matter of convenience, perhaps, than of any thing else. —ED.]

PICKINGS

FROM OUR NEIGHBORS' FIELDS.

BY "STENOG."

Into eternity goes the old year;
The century, too, hath its close;
The millennium dawn now hastens fast on,
Ending humanity's woes.

⁂

AMERICAN BEE JOURNAL.

IN GLEANINGS for Nov. 15 the senior editor had a write-up of Mr. York's journal from the very first. I was wondering what Mr. Y. would say after he regained his breath. Well, he said this:

> We hardly know what to say in response to the exceedingly kind words Mr. Root has written, for it is not possible to deserve them. At any rate, we take off our hat and make our best bow with a sincere "thank you" for all he has said.

⁂

In speaking of the *Canadian Bee Journal* Mr. York says:

> The literary shortcomings of cotemporaries are not considered the best things with which to fill up the columns of a bee-journal; but it may not be greatly out of order to say that since W. J. Craig has taken the editorial chair of the *Canadian Bee Journal* there has been a very gratifying improvement in the proof-reading of that journal.

Amen! But the improvement is great all over.

⁂

The subject of getting bright yellow wax out of old combs is now receiving considerable notice. Mr. York thinks attention is being diverted from brightness to mere color, and thinks Mr. Dadant would pay but little attention to the yellowness, but would insist on brightness. He says, "As a matter of fact, slow cooling is a *sine qua non* in ninety-nine cases out of a hundred, and perhaps necessary in the hundredth case. . . Some wax from old combs needs the addition of acid to bring out the bright color, but that does not take away the necessity of slow cooling, and there is practically no bright yellow wax without slow cooling." But why does slowness of cooling have any thing to do with the brightness of appearance? Simply because a long time in cooling allows the dirt and sediment to settle to the bottom of the mass, leaving the pure wax by itself.

⁂

Mr. Dadant gives an interesting account of his visit at the home of Mr. Ed. Bertrand, who is probably at the present time the best-known bee-keeper in Europe. He, more than any other one man there, has been the means of introducing movable-frame hives among the French, standing alone, practically, at first. Soon after Mr C. Dadant came to America in 1863, he saw the immense advantage of movable frames, and tried in vain to advocate their use through *L'Apiculteur*, edited by Mr. Hamet, a very fine gentleman, but one whose back was always resolutely set against any change in the old order of things. By working with Mr. Bertrand on that side of the Atlantic, Mr. Dadant has done so much to improve bee-keeping in France and Switzerland that their name is a household word there—so much so that Camille P. says they literally hugged him when he went into their homes while on his recent visit. Mr. Bertrand's works are numerous and popular. We have them all here, some being printed in Russian and some in Flemish, as well as the original French. Those who have GLEANINGS for 1891 will find on page 697 for that year a picture of Mr. Bertrand, with a full account of his life, written by Thos. W. Cowan. Perhaps Mr. York will lend us that view of Mr. Bertrand's fine residence at Nyon, Switzerland. Such men should be kept in remembrance. From private correspondence I have had with Mr. Bertrand I feel that a visit at his home would repay the trouble of a visit to the land of mountains and of William Tell.

⁂

In my mind, one of the most interesting papers on honey and sugar in general is one from Thos. W. Cowan, now of California, editor of the *British Bee Journal*. It treats on the chemical properties of glucose, honey, sugar syrup, corn syrup, starch, cellulose, dextrose, wine, and other substances, and shows how adulteration of honey can be detected by means of the polariscope. It is impossible to make any condensation of this great paper, and it will not be necessary, as a copy of it can be had by anybody desiring it. But it is not light reading. Every paragraph demands study, as does any scientific matter worth reading. Mr. Cowan shows that many substances are chemically like others, and yet are widely different. Sawdust is the same as corn flour ; leather is the same as beefsteak ; tea is chemically of no more value than plum and willow leaves. Mr. Cowan well says : "We prize honey, not because it consists, as the chemists would say, of sugar and water, but because it possesses delicate aroma and flavor which are always absent from, and can not by any known means at present be imparted to, any artificially made syrup." That ought to be pasted on every honey-label sold in the United States and in the lands surrounding. At the close I see the editor of this journal is reported as saying he fears the article is too technical for the most of us ; but I really believe it would benefit us all to become more familiar with such matters, and to be able to think over the thoughts of some other men after they have put them on paper. The essay was read at the Chicago convention.

GENERAL CORRESPONDENCE

A NEW OLD METHOD OF INTRODUCING.

Using an Escort from the Hive to which a Queen is Introduced.

BY C. P. BONNEY.

[The following letter, addressed to Dr. Miller, was by the latter sent to us with the recommendation that we publish it. As it contains much of value I am glad to do so.—ED.]

Dr. C. C. Miller :—On receiving GLEANINGS to-day I noticed a Straw, page 680, where you placed bees from a strange colony with a queen, and she was kindly received. You ask, "Why can not this be made the basis of a safe introduction ?" I have been using such a plan, and it is the most satisfactory of any I have ever used. I once introduced queens by caging a part of the colony. To this part caged I gave the queen, and then ran them in at the entrance. This plan worked well, but was considerable trouble, and I thought I could carry the same principle to the caging plan. I found by experimenting that I could use quite a less number of bees than half the colony, with perfect safety, and I now use only a few dozen bees and the caging plan.

I now use a large Miller introducing-cage, ¼ inch thick, and with a bee-chamber four inches square. I go to the colony to be dequeened, find the old mother, and remove her. By the aid of a brush I scoop several dozen bees into the before-mentioned cage. When enough have entered the cage, or when it is comfortably full without being crowded, I put in the stopper *and set the cage away for half an hour*, then take the queen from the shipping-cage, and place her in the introducing-cage, and she will be kindly received. After the bees have had time to become well acquainted with the queen, say two hours, place the cage in the hive, and the queen is safe. Please try this method, and report in GLEANINGS.

Woodburn, Oregon.

[At the time of sending this letter Dr. Miller gave his indorsement after this fashion :]

Dear Ernest :—This looks to me like a good thing. After the workers have been caged half an hour they will be in no humor to molest the queen ; and with so large a force of bees that already have belonged to the colony, when the candy is eaten through, especially if pasteboarded, the queen ought to be safe.

C. C. MILLER.

[Along with this letter of Mr. Bonney came one from Mr. Pridgen, to whom it had also been referred by Dr. Miller, evidently. Mr. Pridgen, one of the very best authorities in this country on queen-rearing, writes :]

From my experience in introducing queens by using bees from the colonies to which they are introduced, I consider the plan outlined by Mr. Bonney far superior to the usual instructions that accompany shipping-cages. In fact, I have not attempted to introduce one in years with the cage in which she is received, without first releasing the escort and caging some of the bees of the colony with her, which invariably treat the queen kindly if very young, or have filled themselves with honey. It works equally well if the queen be caged in an odorless cage without any bees, but still better to use the bees and odorless cage, or the odorless cage without the bees first scented by allowing the queen to be superseded to remain in it an hour, in the hive; but I prefer scenting the cage with the old queen, and then using the bees with the queen to be introduced, either by placing her in it and selecting the bees one at a time, or allowing them to go in, which they quickly do in search of their mother, and close them up for awhile, and then allow the queen to run in.

One advantage worth considering in having bees with the queen is that she is less liable to be damaged by the outside bees by getting hold of a leg or wing. I am partial to side-comb cages, as the queen is placed right down in the cluster; but instead of relying on hatching brood, young bees are at once put into the cage with the queen, through a hole near one corner, as large as a leadpencil. The hole is stopped a day or two with a cork, and with candy when the cork is removed, thus allowing the bees to release the queen, and combining the good points in the different methods. A great deal of this is too complicated for a novice, and no doubt for that class the usual instructions are best; but before being too confident of uniform success by pasteboarding it should be remembered that, when queens are sent by mail, bees, cage, and all partake of the scent of the mails, and from this source much of the trouble arises, and there will not be the success that attends the same plan if the queen be changed to a fresh cage, thus removing much of the odor.

Bees will often destroy their own queen if given back after having been caged an hour or two with some of her own bees in a cage that has an odor that is transmitted to the queen.

Inasmuch as Dr. Miller was impressed with the fact that bees caged with a queen from a different colony were kind to her, I wish to say that, when robbers are bad, I often prepare a number of cages with escorts, by selecting the returning young bees that are taking their playspells, and find that it works well, as they always treat the queens kindly, are exactly the right age, and I have only to keep the nuclei open long enough to find the queens.

Creek, N. C.

[When Dr. Miller first spoke of this plan in his Straw, p. 680, I did not take much stock in it; but I am free to confess that there must be something in it after all. Caging the bees, and keeping them so until they have a real sense of their confinement, or loneliness, no doubt puts them in a condition where they are ready to take up with *any* queen. When they are given back to the whole colony having the same scent, the new queen with them, all goes on lovely. But, as Mr. Pridgen points out, it is doubtful if the beginner would be able to recage or change the escort. But the advanced bee-keeper may well give it a trial. I should be pleased to hear from others.—Ed.]

DIVIDING VS. SWARMING.

Boiling Foul-broody Honey.

BY W. W. WHIPPLE.

Last April I met with quite an accident that kept me from work some weeks, and my apiary had to be neglected; and when I was able to work it kept me busy from early morn till late at night. Thinking I could make it a little easier during the swarming season if I divided for increase instead of letting them swarm naturally, I divided part of my strongest swarms, as recommended by Doolittle, and flattered myself that I should have a good time so far as that was concerned, and I did; and now I am fully convinced that dividing for increase is a great thing to do, for every division swarmed, and some of them twice—in fact, nearly all my swarms came from my divided colonies. However, I got a very good crop of honey, and the bees seem to be in good condition for winter.

W. W. WHIPPLE.

There seems to be a great diversity of opinions in regard to the time foul-broody honey should be boiled in order to make it safe to feed. Some say five minutes, others ten, and it runs from that to six or eight hours, in order to kill the spores. For the last six or eight years I have fed considerable foul-broody honey, and have never had any trouble when it was brought to a good bubbling boil. If it took two to four hours boiling to kill the spore, it seems to me it would be more humane to hunt old Spore up and cut his throat, and not scald him for two hours. Such cruelty would hardly do in Colorado, for our ever watchful secretary of the Humane Society would be after one with a warrant. As to hives and queen-excluders (and I have used them both), I agree with McEvoy that where there is no honey adhering to them — in fact, are clean, having nothing on them that can be fed to the brood — they are perfectly safe to use; however, I have no objection to boiling the honey a week if one so desires.

Harris, Colo.

[I am glad to introduce to the readers of GLEANINGS Mr. W. W. Whipple, of Harris, Col. He did much to enliven the proceedings of the Colorado State convention a year ago, which I attended. He never arose to his feet but his eyes fairly twinkled with fun. It is said that a man's countenance betrays his inner nature. If he is full of sunshine he shows it. In the picture above, Mr. Whipple shows his practical good nature; and in the article he illustrates the very qualities I have mentioned. At the first reading of it I did not recognize my friend Mr. Whipple, and I could not think what he was driving at; but finally it dawned on me that he was putting up a practical joke on the advocates of dividing. In his second paragraph it appears he is getting off a "drive" on the writer; for I have been somewhat prominent in the advocacy of long boiling. I should be quite in favor of catching the spores and cutting their throats, if Mr. Whipple will perform the act.

But, joking aside, from what I could see and hear in Colorado I am satisfied that much that was called foul brood was not that disease, but something else. What it was I did not then know; but I have since had reason to suspect that it was pickled brood—a disease that readily yields to mild treatment. I should be inclined to believe that friend Whipple has, in some cases at least, mistaken pickled brood for foul brood, and hence he might draw erroneous conclusions. The two diseases are very much alike in appearance, and it takes close discrimination to distinguish the one from the more virulent form of disease.—ED.]

RED CLOVER AND RED-CLOVER BEES.

Difference in the Strain.

BY J. N. ARNOLD.

In GLEANINGS for Oct. 15 I see an interesting article from S. P. Culley on "Improvement of Red Clover and Bees;" also your editorial on page 813, which I was interested in reading. In the past eighteen years I have had some experience with red clover and bees. For eight years I had one apiary, and for three years two in a locality that was a level country with a deep black soil. When the season was wet, grasses grew very large and heavy, especially red clover. The tubes were so deep that none but the Italians were ever seen working on them, and they never stored any surplus honey that I noticed. For nine years I have had my home apiary in a locality that is clay soil. Years ago it was a body of white-oak timber, now farm land, and kept up by small grain and red clover. During these years the most of my surplus honey has come from red clover. On this clay soil the tubes do not grow so deep as on damp black soil. I have observed, also, that when the season was dry the bees would gather more red-clover honey than in a wet season for a while, and give it a rank growth.

In regard to your editorial, I have noticed the past few years some colonies excelling others very much in storing red-clover honey while all were good Italians, and cared for in the same way, queens all the same age; some few colonies would give almost double the surplus other colonies would side by side. I have one colony that stored double the amount of any other in the apiary this season, from red clover.

Kalona, Iowa, Oct. 23.

Ridge-Pole
Musings.

CANDIED HONEY FURTHER DISCUSSED.

Glass all Right for Fancy Trade; Cheap Packages for the Masses; the Truth About Displaying Goods.

BY R. C. AIKIN.

Our previous musings discussed cheap honey and the cause thereof—why we have to sell cheap. I acknowledge there is a limited demand for honey in fancy packages and at fancy prices, but contend that we should not be compelled to depend on selling altogether as a luxury. There is no better sweet for table use for those who like honey, and there is no good reason why we should deny the privilege of honey to the day laborer and the many millions who are dependent upon meager salaries; but expensive packages and frequent handlings in melting and exchanging, all the foolishness of putting it in glass for people to look through, does put it beyond their reach.

I think I hear some say that it is just the laborer that will buy honey; but to all who think so, I ask you to make a close estimate of the cost of keeping an ordinary family; and when you have done so you will find that the man who works at $1.00 per day, and is at it every day in the year, can not buy much honey or any other sweet at 15 to 20 cents a pound. I know what I am talking about, for I have been in a position to know about these things, and have looked carefully into the matter. I confess my sympathies are with the poor laborer. Yes, I do know that many who get what is called good wages squander it in drink and reckless living.

A SCENE IN OBERLIN.

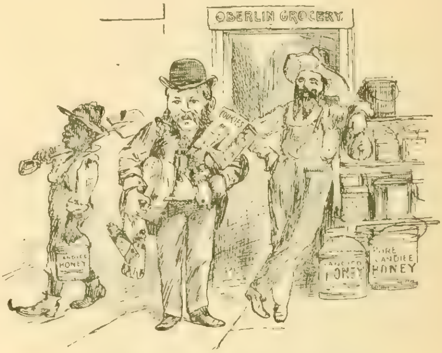
"Wot yer got, Chawley, me boy?"
"Honey! honey! doncherknow?"
"Aw, doocid little of it, Chawley."
"Yas, but then, Gussie dear, after I eat me honey donchersee what a clever tooth-brush holder I av?"

Those who are contending for glass packages, and showing the honey in glass that it may sell itself, tell us that glass is used more and more, and we must use it or we can not sell our product. That claim has no foundation worthy of consideration. No doubt glass is used more and more, so are a thousand other packages. Glass is not on the increase, except for those who have grown wealthy, and desire to pay big prices. It is a piece of the same kind of foolishness that caused a certain lady to refuse to buy a good piece of goods because the price was only $100; but when the same thing was put up at another place, and at $500, it was eagerly bought. Some people do not seem to care for quality so long as looks are all right, and the price beyond that which a poorer neighbor can pay.

After eliminating these foolish people who sacrifice all for looks, and those who want fancy things that they may outdo their neighbor, and all such foolishness, there is the great mass of the people who want that which will serve them best for the least money. This class is the great majority. With all classes there is much of the distrust and suspicion of fraud in the things they purchase, and they have good ground for being suspicious. This distrust can be overcome only by education. The people believing things are adulterated is no excuse whatever for putting only liquid honey on the market. I say, too, that the idea that people will not get used to candied honey, and have confidence in it, is *mere foolishness*.

When people have something new they just proceed to introduce it, and it soon goes if it has merit. If the people do not know what candied honey is they will quickly learn. A little enterprise to explain and get some to try it once, together with the knowledge that they can do the melting themselves, and so get the honey much cheaper, soon accomplishes the result. I can not think otherwise than that those who say the people "*will not* take candied honey" are decidedly lacking in push and business ability.

When at the Chicago convention in August, a bee-keeper told me how he had been always putting out liquid honey, and how he lost a wealthy customer. His custom was to sell in small quantities so that it would be consumed before candying. This particular customer, for some reason which I have forgotten, did not use his honey for some time; so when he did get ready to use it the stuff was all sugar. He at once concluded he was paying fancy prices for sugar, and when the honey-man came around again he was peremptorily ordered off, and was not even allowed to attempt an explanation. No more honey was sold there. You see that customer had been *educated to expect his honey always liquid*, and so was deceived into thinking that pure honey was so. A little education, showing the people that honey will candy, teaching it in print where it will be read, selling a sample with a warrant that it will again assume the liquid state, and have the honey flavor when properly handled, will soon bring it into favor.



"WELL, SO LONG, MR. FOWLS!"

But I wish again to return to a consideration of the package. It is not the custom to have goods put up so as to display them through glass. Crackers and cookies, candies, nuts, dried fruits, etc., are shown through glass; but I will make a guess that Mr. Chalon Fowls has never carried home more than a hundred of these show-cases, boxes, and stands; and 99 times out of 100 when he buys groceries he carries home a paper, tin, or wooden package. He calls our attention to the fact that even cheese at his store is displayed in glass—ha, ha! but I'll bet if he carries off that display glass he will soon bring it back. I think I see Mr. Fowls going home with his cheese in a glass box. Who ever heard of glass packages for cheese?

Yes, yes, Mr. Fowls; display can not be ignored and do ourselves justice in getting our product before the consumer; but that is no argument that the consumer should have to pay for a *display-stand* every time he makes a five or ten cent purchase. I tell you the people will quickly learn the nature of honey to candy if you will give them a chance to learn it, instead of trying to keep them in ignorance of the fact; and they will appreciate an effort on your part to give them good gilt-edged honey at a fair price without having to buy a glass-factory. We want the cheapest neat and serviceable package we can get, that thereby we can get the product to the consumer with little extra cost.

Let those who have been selling honey as a luxury only, get out something that the poor people can buy, and you will be surprised how much you will increase your business. Had I some of those high-toned customers that want us to sell them high-priced goods I would supply their need (desire), but I would also try to meet the *needs* of the poor, which would be more honorable, and a good business proposition.

I am putting up my honey so that it is a rare thing for me to sell single pounds. The pound deals belong to the well-to-do fancy trade; but when a common every-day man comes he wants honey to feed the children, and seldom buys less than 25 to 50 cents' worth. It is better to have ten deals of five pounds each than 20 one-pound deals. The smaller the package the greater the proportional expense per pound for first cost of vessel, and the greater expense in time, filling, etc.

My four-pound pails, nicely lithographed with business card and liquefying instructions on them, cost me from 5 to 7 cents each; larger pails in proportion; the three sizes of 4's, 7's, and 14's cost about a cent per pound on the honey, averaging all around. The honey is drawn into these pails while yet liquid, and once in them there is no melting or other expense to run up the cost.

Again, touching on the packages in general use for all kinds of groceries, while many things used to be weighed out of bulk packages, and tied in paper, now these goods are put in packages at the factories. In this respect the West is ahead of the East in many ways. The wheat and oat preparations, dried fruits, and a great variety of dry products, are put up in some neat and *convenient* paper package, and wet goods are in tin, except a few things. Two prime objects are kept in view—to make it convenient to handle, and to cheapen the article. It is very much quicker and cheaper to hand out a ready-packed piece of goods in such quantity as is generally called for than to weigh out of bulk. Do away with the liquefying and trading honey, and you take off a useless expense.

I said the West is ahead of the East in many ways, and I will mention several. Here every housewife or butter-maker puts the butter into pound prints or rolls, and these are wrapped in butter-paper. Our storekeepers would not think of ladling butter out of a tub by any quantity you might want. You buy by even pound or any number of even pounds. Another great improvement is the decimal system of counting. Wheat, oats, corn, and all grains, potatoes, apples, onions, and all such, including squash and cabbage, are sold by the pound or hundred. There are lots of people here who could not answer you if asked the price of any product by the bushel. A peck or bushel measure is seldom seen in stores; but the scale is everywhere in evidence.

We need to simplify our methods, and leave off the old slow methods that are out of date.

* * *

BOTTLING HONEY.

Questions Answered; Bottling Cold Honey, and Heating Afterward.

BY WALTER S. POUDER.

[I would say to our readers that this is an answer to a series of questions asked of Mr. Pouder at the close of his first article on bottling honey, which article appeared in our issue for Oct. 15, p 802. As some of our readers may not have this number handy I would state that I asked Mr. Pouder *why* he poured his honey *cold* into the bottles, and then heated the same afterward before corking; whether he did not consider 190 degrees of heat as a little too high, and what preparations he considered best for dipping the corks into before inserting into the bottles. As will be seen by that which follows, Mr. Pouder has answered these questions.—Ed.]

A speedy method that can be practiced by any bee-keeper, without the aid of steam-pipes or expensive appliances, is what the readers of Gleanings demand, I believe. May be if I had a tank equipped with a steam-coil I would heat honey for bottling on this plan; but I am not so fortunately equipped, and I think many of us are no better off. I prefer to do bottling with cold honey early in the fall, before granulation starts, thus requiring but one heating just before the labels are put on. The corks can be inserted and the filled jars stored away, and what better storage vessels could one wish for? This can all be done at odd times without interfering with other work. If I heated my honey and then filled the jars with hot honey, the work would have to be done hurriedly; if finished up they might not look fresh and clean as those that have just had a hot bath and a clean new label. This cleaning up and labeling can be done just before the goods are delivered, so that no part of the work need be done in a rush. A number of years ago I laid aside the use of thermometers in connection with melting granulated honey. I have seen the water boil, which must have been at a temperature of 212, and the honey in the jars would indicate a much lower temperature. To be sure, it would not do to permit the water to boil any length of time, and it is a great mistake to allow the water to come to the boiling-point at any time. Wtih a little experience one can tell when the jars are sufficiently heated by occasionally lifting out a jar

I have often been asked how to simplify the insertion of corks. I take a pail containing water to the depth of half an inch, and fill the pail with corks and place on a lid. Let the water boil a few minutes, and they are ready for use. Do not use the ones that are water-soaked, but use the steamed ones. You will find them soft and pliable, and none will break. The water-soaked ones can be used at another time.

I have experimented with different waxes and combinations of waxes, but have found nothing that suits me as well as paraffine and beeswax, about half and half. Half a teaspoonful on each cork, immediately after removing from the hot bath, does the work neatly, and a side label and a tinfoil cap make them ready for delivery. It is difficult to learn how to put on the foil caps neatly; but a little practice is all that is required. I use a ½-inch strap, which is securely fastened to the table; wind it around the neck of the jar, with the strap in my left hand and jar in right hand; pull snugly on the strap, and this will smooth down the edges of the foil beautifully.

Indianapolis, Ind., Nov. 14.

[At first I was inclined to believe that the honey should be heated to the requisite temperature *before* bottling; but after some experience in putting up bottled goods we have come to the conclusion that Mr. Pouder is right in saying that the bottles should be filled while the honey is cold, for the simple reason that this part of the labor can be done at any time when one has leisure. Of course, the jars containing the honey must be heated before they are sealed. This is done by setting them in a vat of hot water nearly up to their necks, and keeping them there till the honey is heated clear through, reaching a temperature anywhere from 160 to 180 degrees; then while hot the jars should be picked up by the neck, and corked. When sealed, an attendant can, with a moist rag, wipe them clean, and label them; or one can do all the work himself if he chooses.

Mr. Pouder makes another good point when he says he makes a practice of mixing his raspberry, basswood, and clover honey before bottling. To give a set of customers at one time a flavor of basswood, and at another time a flavor of clover, always creates suspicion. If consumers get the same taste every time, and it is easier to maintain the same taste by mixing, no objection will be raised to the second lot of honey. Then this is true: There will be times when one will be able to get but little clover honey—take, for example, this past season; but if we can get just a little, and then mix basswood with alfalfa, mountain sage. or some equally good flavor, we can still hold the trade.

On this particular point, Mr. Selser's practice—and he is, perhaps, the most extensive bottler of pure honey in the United States—is quite different. He puts up only clover honey. Basswood, no matter how good, he will not have at any price, because he says his trade will make trouble for him if he puts up any other flavor.

These are points I should like to have our honey-bottlers discuss; and particularly should we like to hear from Mr. Selser.

I should like to ask Mr. Pouder a few more questions. What is the size and depth of your melting-vat? Is this vat of water heated on the stove or by means of a steam jet? Do you find it necessary to have more than one vat — one, say, for two-quart Mason jars, and another for short jars like the Muth? If the vat is heated on the stove, do you find it necessary to have a false bottom in the vat to raise the glass jars slightly above the bottom of the vat, to prevent breaking the glass? If the bottom of the jars come in actual contact with the bottom of the vat, they would receive a greater heat than if they were raised up so there could be a complete circulation of water under. Another question: Should the corks be a trifle large, and put in with a corking-machine, or is it sufficient to have them just right, and put them in by hand? Should a large or small label be used? and should it be on the cork or on the front of the bottle? Again, please tell the readers how you wash the jars. This may seem like a simple matter, but certainly there are good ways and poor ones. After the jars are washed, do you rinse them with hot or cold water? In either case, how do you dry them out?

There are three or four others who are writing a series of articles on this subject, and I wish they would place before them this same set of questions, for I hope no one will take it for granted that certain things are well known, and, therefore, do not need amplification.—Ed.]

BOTTLING AND SELLING HONEY.

Importance of Filling Jars while Hot, and Filling Full; "Extracted" and Candied Honey.

BY GEO. SHIBER.

I was very much interested in the article of Mr. Pouder in the Oct. 15th issue, on bottling and selling extracted honey, as his experience is so parallel with my own. I thought, after reading it, that perhaps my experience in this line would be interesting and profitable to some who had not thoroughly mastered the "knack" of selling honey in the extracted form. Oh that word *extracted!* what a terror that was to me! It somehow has the ring of extract, or honey extract, extract of honey, a sort of adulterated sound to the uninitiated. But I believe I have mastered the term so far as its prejudicing my trade is concerned.

I am not a large bee-keeper, having only a few colonies for comb honey, which always easily sells; so with selling comb honey this article has no concern, but selling only extracted from the dealer's standpoint. As I have for some years past conducted a retail store, grown from boyhood to manhood in the business, I make the statement that any grocer will welcome and buy any article that is good and will sell at a fair profit. This is a fact; and it is also a fact that the selling of goods to the retailer is a fine art; and the man who does it commands a good salary, though it's hard, nerve-tiring work.

A year ago this present month, comb honey being hard to obtain in this section, I thought I would try my hand at selling some extracted. I accordingly ordered of F. H. Leggett & Co., of New York, two cans of California white-sage honey. One reason I ordered the sage honey was that, in an old edition of the A B C, I found these words: "One striking peculiarity of this honey (sage) is that it does not candy, but remains limpid during the severest winter weather." Nevertheless the sage honey I got did candy in very mild weather. When the honey arrived the house had mistaken my order; and instead of sending two cans they sent two cases of two cans each, or 240 lbs. I thought at first I would send half of it back; but upon examining it I found it to be a fine article, and made up my mind to sell it. I bought a gross of white glass fruit-jars, pint size, and found they held about 1 lb. 11 oz. At first I filled the cans with the cold honey, but it candied too quickly. I remember selling to an intimate friend of mine a can that had candied. The next day he brought it back, called me aside, and very solemnly said, "Shiber, that's made stuff; there is no honey about it." Well, I knew better than that, as it was bought and billed to me as "strictly pure honey," and I knew the reputation of the house I was dealing with. This man afterward became a good customer. I converted him with the bee-books. I kept the A B C, Cook's Guide, Langstroth, etc.; showed him pictures of extractors, etc. After that I stopped trying to sell it after it had candied. I would then convert it to the liquid form with hot water in the regular way. I then sealed it up while hot, and that did not candy again — that is, before I sold it. From this I took a hint and afterward put one of the 60-lb. cans in a wash-boiler filled with hot water. When it got heated through it was poured into the cans, sealed air-tight with the rubber fruit-jar rings, and remained liquid until sold. I will say further, that, by the holidays, it was nearly all sold, and I had educated my trade to use extracted honey, *and call for it*, and had made money doing it.

Another thing that made it sell was that I kept it always in sight, right under everybody's nose who came into the store. I want to whisper into every bee-keeper's ear, when you sell a grocer extracted honey, insist on his keeping it right on his counter, or at least a part of it there, so that it will be impossible for one to come in without seeing it. Seeing it will lead to inquiry and often to a sale; and, gentlemen, it will surprise you how much even one store can sell in a season. Sealing it when hot (the editor says 180 degrees is the limit, and I think he is right), keeps it from candying for a long time. And then I like the fruit-jar for a package. It is useful after it is empty. Bottles are as expensive as jars, and they are of very little value to the buyer. The cost of them has to be added to the price of the honey, and so does the jar; but it is worth the price to the average family, and sells far more readily.

Another point in bottling is to fill the package full, sealing it while hot. This is an additional preventive of early candying. This point I learned from GLEANINGS awhile back, and have since found it to be valuable

One more more in regard to the word "extracted." When people would come in and ask what that stuff in the jars was I would instantly respond that it was honey taken from the combs by a machine called an extractor, thrown out by centrifugal motion, hence the word "extracted." When you sell extracted honey to a person who does not know what that means, don't let the word stay in his mouth long without following it up with an explanation; for before he gets the explanation his mind is forming an opinion, and we want that opinion right. This can be obtained by following quickly with the explanation; then we are ready to make the sale, for we have said the right thing in the right place. In selling a new article it's what the seller says, and how he says it, that sells the article. Then if the buyer likes it he buys more. If the buyer happens to be a dealer he will buy some more to sell again. That's the knack in a nut-shell.

Franklinville, N. Y.

BOTTLING HONEY.

Reasons for Heating the Honey and then Bottling; How Hot should the Honey be Made? Style of Glass Packages to be Used; Mixing Various Honeys.

BY CHALON FOWLS.

In giving my method of bottling honey I do not claim that it is the best one. Indeed, it is quite likely some one else may have some better plan; and if so I hope he will bring it out at this time so that we can all learn how to do the work in the best and most expeditious way. The plan given by Mr. Pouder, on page 801, may be better than mine in some respects; but, not having tried it, I could not say. Though he does not say so, I infer he would run his whole crop into the bottles before it has candied, and then liquefy and seal only as fast as needed for his orders. With me this would make too much work in the summer, when other work is pressing. Otherwise, if the honey is left in bulk until it is candied it would look as though it would have to be heated twice to finish the job. I should suppose, too, that it would be difficult to put in just the right amount when cold so that the bottles would be full when heated, and not too full, so as to run over. Perhaps Mr. Pouder will explain those points more fully in another article, so I will now proceed to give you my own method.

In the first place, I aim to put up none but first-class honey, weighing not less than 12 pounds to the gallon, and the same kind year after year. When I have to buy to supplement my own crop in a poor year like this, I get the same kind, as nearly as I can, so consumers will get the same flavor they are accustomed to. For instance, this year, having bought some mixed clover and basswood from Wisconsin, I am mixing in clover honey from Michigan, as I find the Wisconsin honey has not as large a proportion of clover in it as is natural to my locality. Instead of putting up a large quantity at once, as some do, I put up only as fast as needed for my trade. I use six-gallon lard-cans as storage-cans for my own crop; and when buying I get it in five-gallon square cans when possible. For liquefying they are placed in cans large enough to admit of having three or four inches of water underneath and surrounding the honey. The liquefying-tanks had better be made of copper, as tin soon rusts out; and if the tank gets rusty the water will cause the honey-cans to rust too. A wood or coal stove may be used in heating, but it needs constant attention to keep the fire just right; and I now use and prefer a gasoline-stove for the purpose, first heating the water boiling hot on the kitchen range, to save time. It is safe to start with the water at the boiling-point, as the cold honey lowers the temperature at once. The gasoline flame can be regulated so as to keep it just hot enough. In fact, I have sometimes put the honey on to melt at bed time, and then went to bed, leaving it melting all night; but in that case I should leave the flame low enough so the water surrounding the honey would be not higher than 150 degrees; for it should be borne in mind that the temperature will rise as the honey gets melted. It's very easy to ruin the honey by getting it too hot, especially honey of delicate flavor, like that from white clover and all varieties that contain pollen grains. Pure basswood honey, owing mainly, I think, to the absence of pollen grains, may be heated much hotter without damage.

While it is probably all right for an expert like Mr. Pouder to heat his honey to 190 degrees, I think the limit of 180 degrees, as given by the editor on page 802, or 160 degrees as given in the A B C of Bee Culture, is much safer to give out to the general public. I have had clover honey that would not stand 190 degrees without impairing the flavor, and, of course, would be ruined if allowed to get much hotter; and for my part I can see no need of heating so near the danger-point. I think it best to melt slowly, allowing, say, five or six hours for clover and two or three hours more for basswood, and not letting the temperature rise above 150 degrees for clover or 160 for basswood, until it is melted so no lumps can be found in it. Then the temperature should be raised about 20 degrees, and held there an hour or so, when the honey is ready to put up. The tank I use in filling bottles and tumblers holds about 16 gallons, or is large enough to hold either three five-gallon square cans full or the contents of two of my regular six-gallon storage-cans.

My clover and basswood honey is always light in color, for, notwithstanding the heavy expense for large apiaries, every hive is provided with a queen-excluding honey-board, and consequently my extracting-combs are clean. But in buying I often get honey which, owing to having been raised in dark combs, is darker than my own, though equal in body and flavor. In this case I put in two or more cans alternately, as mentioned by Mr. Pouder, so as to equalize the color as well as the flavor.

My filling-tank is set over a pan of water, and the whole thing set on the step burner of my gasoline-stove, so the honey can be kept hot during the process of putting up. I used to dip out part of the honey from the can in the melting-vat, and lift out the can from the hot water, and pour in the rest of the honey. But the five-gallon square cans had to be lifted out bodily by a slender ring at the imminent risk of being scalded by the ring breaking loose; so I now use a glass siphon to run out the honey into the filling-can. I prefer to keep the honey up to 140 degrees or more until it is sealed up in the bottles or tumblers.

I have never used wax in sealing up, and do not think it necessary if packages can be sealed air-tight without it. The main idea is to cause a vacuum, as in canning fruit; and to aid in securing this the packages should be filled as full as convenient with the hot honey, and there will still be a space left when cold, the same as in canned fruit; and the smaller this space is, the better, as the honey will then remain more quiet, which is important.

It may be interesting for clerks or customers to invert a jar or tumbler of honey, and watch the bubble of air rise slowly through the honey, and it may also be an effective way of showing the body and general attractiveness of the honey; but the more it is moved back and forth, the sooner it will grain. Just imagine, if you can, how it would seem to have honey put up by the bees in their waxen bottles in such a slipshod manner that it could be slopped about from side to side or from end to end, and then remember that honey rarely candies in the comb unless exposed to a very low temperature.

On page 802 the editor asks why it will not do to bottle up honey cold. I will answer that by saying that, if I were asked the quickest way to make honey candy, I would say, "Pour it cold from one dish to another." Besides this, it would not stay in the bottles, as there would be no vacuum; and just as soon as it was put in a warm store, it would expand and stream over the sides.

I well remember putting up a dozen glasses for a grocer who would not wait to have it heated, saying it would do just as well to put it up cold. He never wanted any more like that. Every glass ran over, although not filled quite full; and the fun of it was, they *never stopped running over.* He would wash them all off clean every morning, and they would begin to stream down the sides before noon, or as soon as it got warm in his store.

But, to return to my process. I have never used the square bottles and corks, as I have always felt it would be an imposition on the consumer to give him a comparatively worthless bottle with his honey when I could just as well give him something that would be useful for some other purpose. I have heretofore used jelly-glasses and pint Mason jars; but lately I have got to using the No. 25 jars sold by The A. I. Root Co., and like them best of all. They hold a full pound, and are the most perfect self-sealing fruit-jar that I have ever seen—have a smooth surface to stick on labels, etc. The jelly-glasses are much harder to seal, but it can be done so that but few will leak by using two or more thicknesses of paper, putting smooth tough paper like manila or waxed paper next the honey, and some soft spongy kind on top of that, like that used for pencil-tablets.

The first picture shows the process of liquefying on the gasoline-stove, with siphon in place to run the honey into the filling-tank. Of course, it is necessary, first, to run out the water that surrounds the honey-can, else the can would float as soon as it began to get light. The second picture shows the process of filling, sealing, and labeling glasses. My daughter, Violet, is seated at my left, filling glasses from the tank, while I come next, capping, with Mrs. Fowls seated at my right, labeling. The labels should always be put on while the glasses are warm, as they stick much better at that time. We use a small label, one by two inch, gummed, first passing it over a moist sponge and then applying it to the glass. The sponge is tied to a small board, and the board fastened down to the table so it will remain stationary. It will be seen by the picture that the caps are put on the glasses by forcing on by the hand, while the operator has to stand in a stooping position. This is because I use paper enough to make the covers go on air-

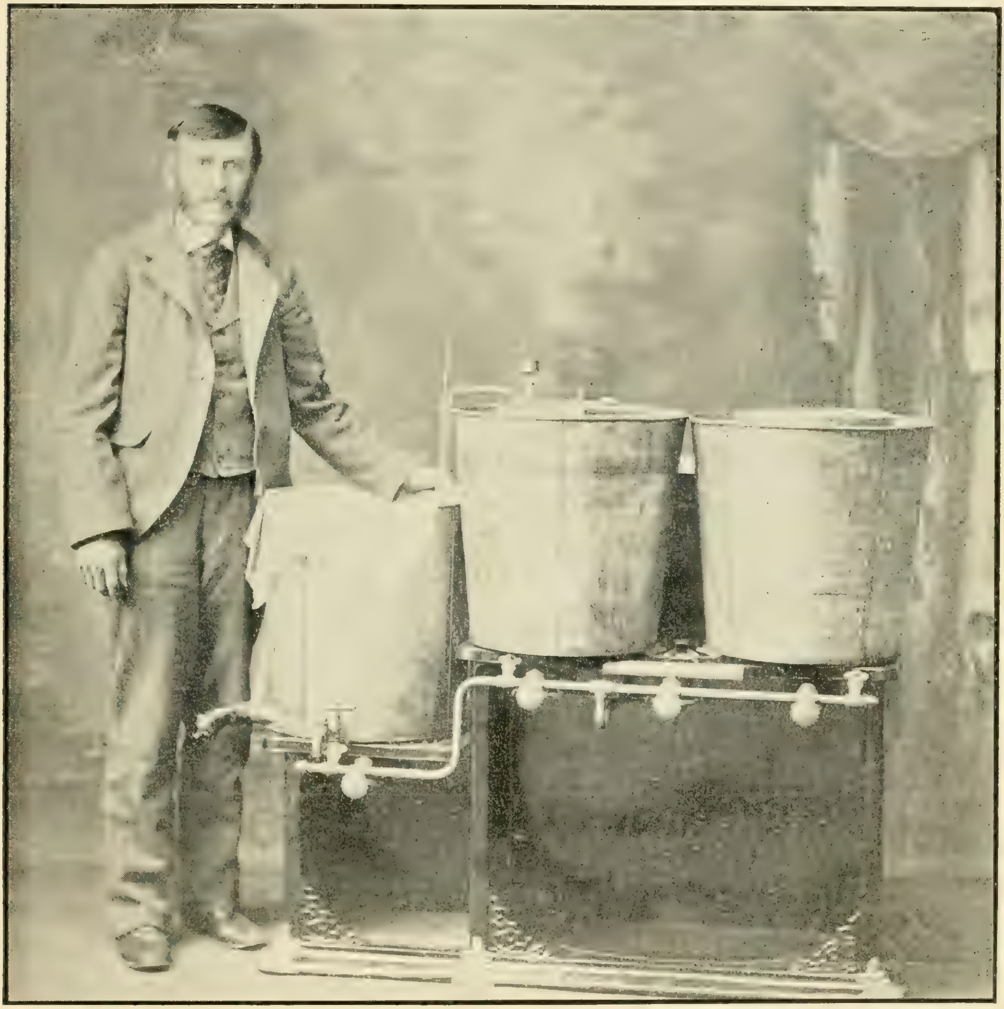


FIG. 1—MR. FOWLS; HIS MELTING-TANKS, SIPHON, AND GASOLINE-STOVE.

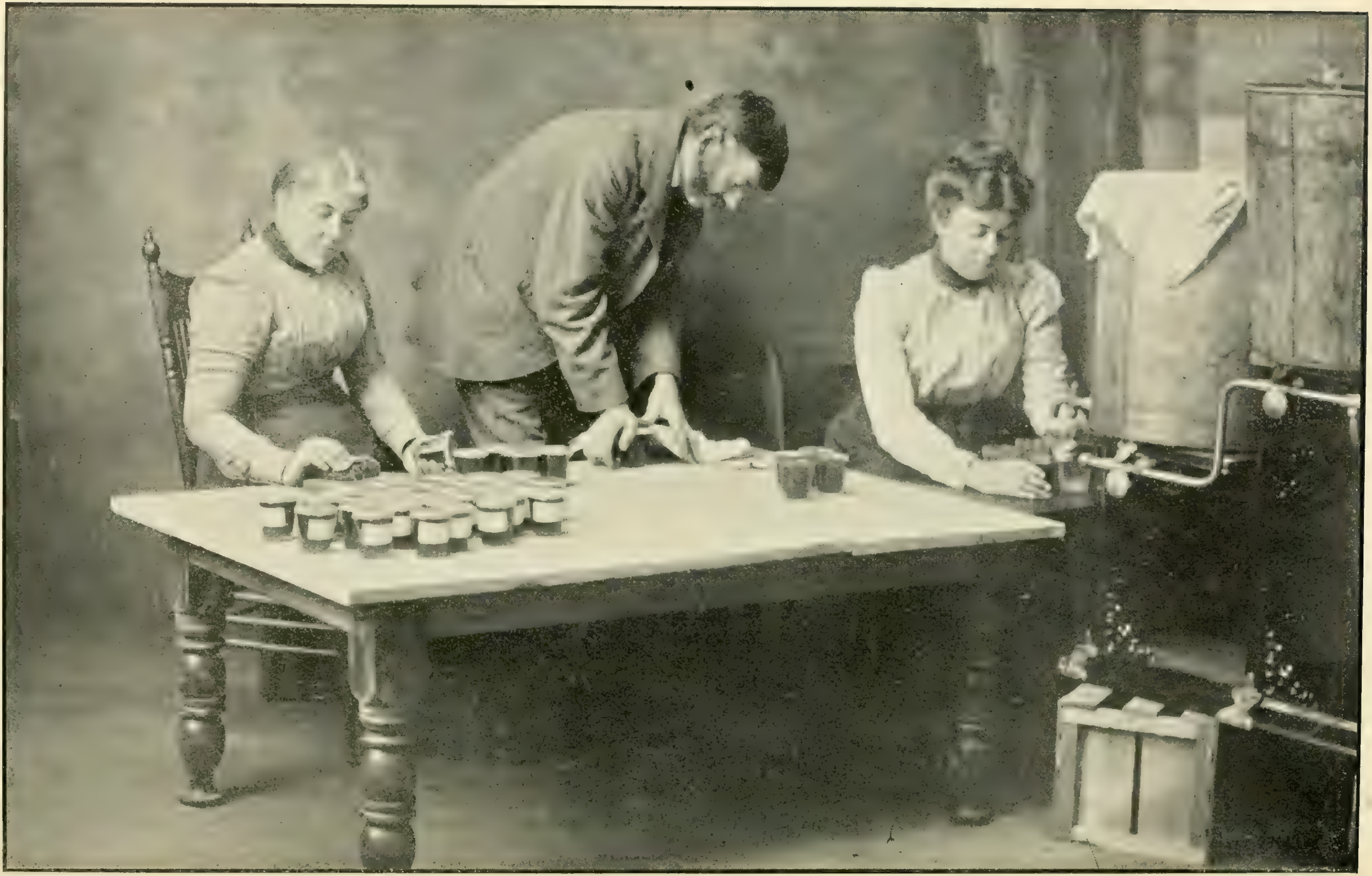


FIG. 2.—MR. FOWLS AND HIS FAMILY FILLING, SEALING, AND LABELING HONEY-TUMBLERS.

tight, and have to bring some weight to bear in order to do it. I have tried other ways, but had to come back to the old tiresome way, so the fingers could be used to guide the covers on straight. Perhaps I can best describe it by saying that I put on the covers as the Irishman played the fiddle. When asked whether he played by ear or by note, he said, "Nayther, but by main strength, be jabers."

Oberlin, Ohio, Nov. 27.

[As I have before explained, friend Fowls is a bee-keeper whose acquaintance I made while I was studying at Oberlin College 20 years ago. At that time he had just started in the business; and if ever a man had a real case of bee-fever, he was the one. Many and many a time he came to my room and talked bees. During the subsequent years we have kept more or less in touch.

Knowing that he has had an extensive experience in bottling and retailing honey, I requested him to go into the matter exhaustively, giving details step by step. I also asked him to have some good photographs taken at our expense, illustrating the various processes that he was to describe, and this he has done.

It is to be noted that Mr. Fowls heats the honey, and *bottles it while hot*, while Mr. Pouder, who also does a large bottling business, *bottles while cold*, and then heats the honey. There may be special conditions when one method may be preferred to the other; and in Mr. Fowls' case this is particularly true, as he says he can do no work in summer. The A. I. Root Co. has been using to a limited extent the Pouder method of bottling while cold, and heating the honey while in the bottle. I am inclined to think that, where one has steam, and plenty of it, the latter plan is preferable, because the temperature is regulated to an absolute degree if desired. But I will describe our method in the near future.

I believe Mr. Fowls is right in saying that 160° F. should be considered the highest point to which honey should be heated for bottling. When I stated 180° in GLEANINGS I was under the impression that I was giving the same figure that was in the A B C book. At the time the article in the last named was written, I remember that a bee-keeping friend of mine made some exhaustive experiments in determining the degree or degrees of heat which average clover honey would stand without injuring its flavor. The result of those experiments showed that 160° was about as far as one could go, on the average, although a few minutes' temperature slightly above that would do no harm. I wish to recall, then, the statement that I made in these pages, that 180° was the right temperature; and, strangely enough, the early experiments of my friend coincide almost exactly with the statement made by friend Fowls above I have known honey to be heated to 180° without injuring its flavor; but as long as the 160 limit serves the purpose of preventing candying for at least six months (and I have known it to keep it liquid for two and a half years when properly bottled), then we should consider 160° high enough.

Still another fact is somewhat interesting right here: Our honey-man, Mr. Boyden, in arranging to heat the honey for bottling, said he disagreed with me that 180° was the right temperature. His experience had shown him that 160° was enough to prevent candying, and he saw no reason for heating it more.

A great deal of bottled honey put up by bee-keepers has been ruined by carelessness in heating it. I have tasted samples, and have been disgusted, to say the least, to notice that otherwise good honey should be almost entirely ruined. Honey brought to a temperature of 200, and kept there for half an hour, will taste as if it had been almost burned; and if it has been actually boiled, one, on sampling, is reminded of burnt taffy.

It seems as if we had had almost enough corroborative proof on the question of temperature; but let us have reports from bee-keepers who have had experience in bottling. M. H. Tweed & Co., of Pittsburgh, have done a great business in this line, and perhaps they would be willing to give us their experience.

Referring to the photos, it is interesting to note that the bottling is all done by Mr. Fowls and his family. That means a greater perfection of work than could be accomplished by ordinary people working for day's wages. The family are all in partnership; that is to say, each member is individually interested in keeping up the quality, and at the same time increasing the sales.

GLEANINGS is glad to introduce Mr. Fowls and his family to its readers—his family—well, perhaps I had better say they are not all represented. At some future time we may have the pleasure of showing the whole force, each in his or her individual capacity, bottling honey.—ED]

BEE-KEEPING IN CHILE.

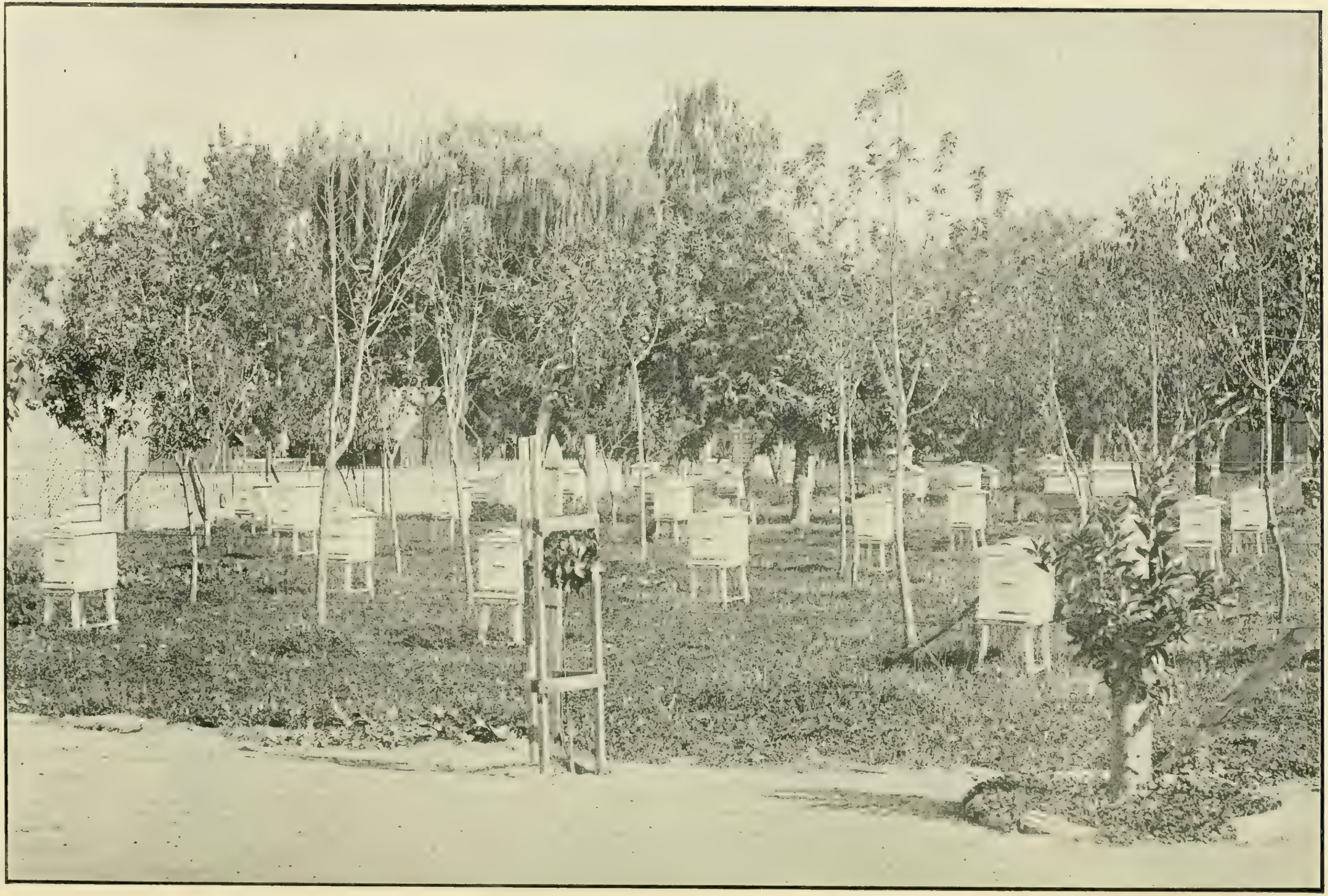
BY OSCAR SPOERER.

We send you by post a photo taken by us of the first installation of your bee-hives in Chile. It represents 20 of your Dovetailed hives in the agricultural school of this town (Concepcion) last year. Although the last winter was very severe, the hives, without any covering, were perfectly sound, and the families in a splendid condition. This year double the amount will be added to this installation. The idea of the directory is to increase it gradually every year.

We think this may be of some interest to your company.

Concepcion, Chile, Sept. 22.

[The countries in the South American continent are making great strides; and foremost among them is Chile. We are very glad to get a peep at an apiary in the far, far Southland; but, why hives on stilts? Is it because of floods, or because it is easier to work the hives? I suspect the latter, and I don't blame any one for desiring to work the hives in comfort. Hives on legs or stilts is an English fad. We should be glad to hear from you again, friend S.—ED.]



AN APIARY IN CHILE.

TONGUE OF A WORKER BEE.

How the Bees Gather Nectar.

BY E. R. ROOT.

Of all delicately constructed pieces of organism, the tongue of a bee is one of the most elaborate and complicated in its general plan and arrangement of any thing that we find in all animated creation. Wonderful as is the sting, complex as are the compound eyes, and beautiful as are the silken wings, the little apparatus with which the bee takes up its food excels them all. Probably not one bee-keeper in ten thousand ever thinks of the tongue of a worker as being any thing more than one little flexible tube through which it sucks the nectar from the flowers; and it is but natural that one should so conclude after he watches one of his little pets with a glass, as it draws up the liquid sweet with that beautiful little tawny proboscis. But, strangely enough, it is not a tube, strictly speaking, but a combination of four *false* tubes formed by the over-

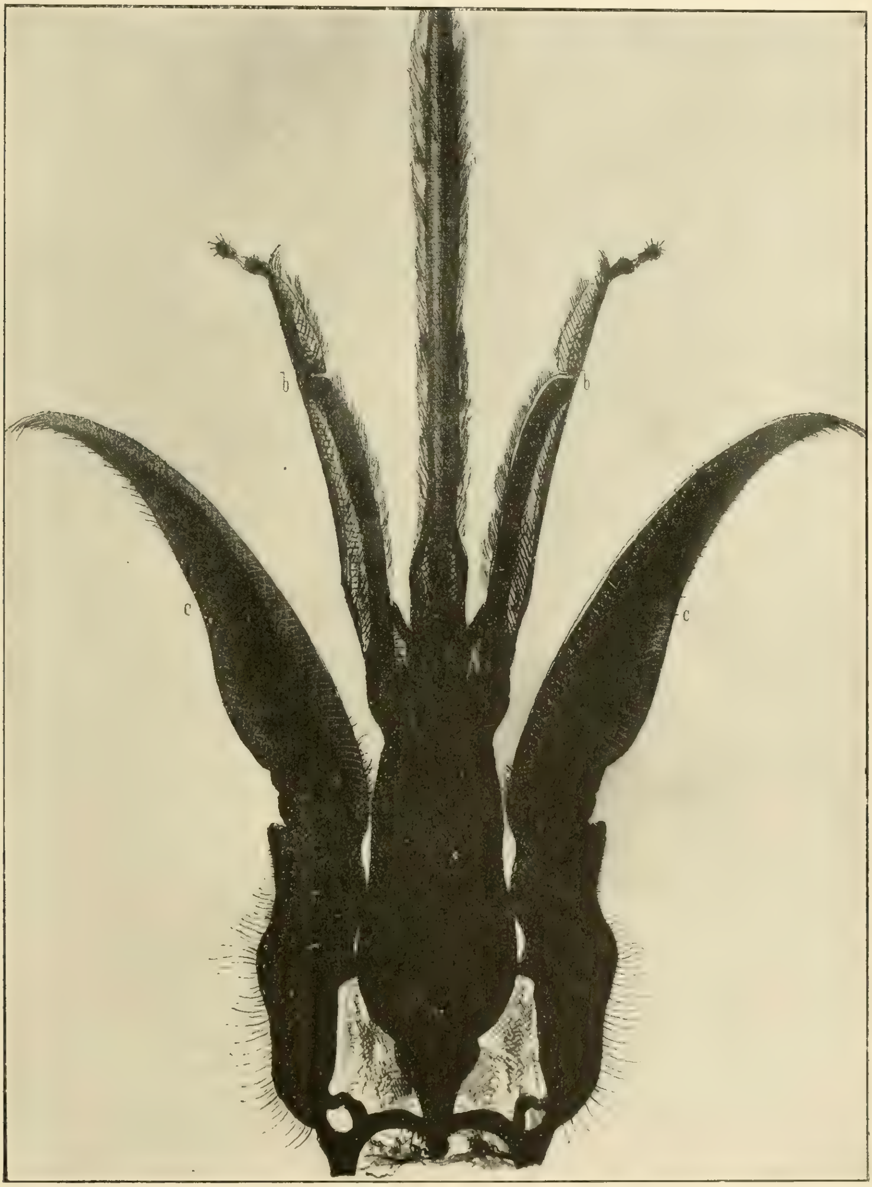


FIG. 1.—TONGUE OF A BEE, GREATLY ENLARGED.

lapping and folding of parts. The whole little organism, delicate and minute as it is, consists properly of one tongue inside of another, and both parts—the inner and outer—are so constructed that one large tube can be formed around the smaller one. In Fig. 1 we have the tongue as it has been dissected from the head of the bee. The two large branches on the side, *c c*, are called maxillæ; the two smaller ones inside, labial palpi. These four close together, the former set above the lower, forming a tube through which the tongue proper, *a*, can work back and forth. See sectional views Fig. 2, at C, D, and E respectively. The tongue, or ligula proper, *a*, Fig. 1, has a very minute groove running its entire length on the front, or on the top side as we look at it. On either side of this minute groove there is a sort of bend, or fold, which makes two more ducts (see G, Fig. 2). Where a minute quantity of nectar is to be gathered, the central groove in the tongue will probably take care of the entire amount. If there is a larger amount, sufficient to fill the two side ducts as well as the central groove, they will all be brought into play. In such case, the tongue, as it sticks out of its sheath, so to speak, will be seen bent backward, sweeping sidewise over the surface that contains the liquid sweetness. When the bee desires to gulp down a large quantity of liquid at a time it makes use of the larger tube formed by the maxillæ and labial palpi both together. The question might be raised, "Why did the all-wise Creator make a proboscis for the bee so complicated as this? Why would not a single tube have been sufficient?" The tongue of a bee, elaborate as it is, and as large as it seems to be in the picture presented, is in reality so small as scarcely to be seen by the naked eye. If there were a tube running the entire length through the tongue it would necessarily be so minute it would fill up, as Cheshire points out, leaving the dry honey or particles of pollen. Then if a bee had to depend on the small opening in the tube it would take it a long time to store its honey-sac full of nectar or honey if a large quantity of either were available. So Dame Nature steps in and provides four pseudo or false tubes—one large and three much smaller ones—the last set inside of the other, either of which may be separated apart and opened out so that the inside of the tubes can be thoroughly cleaned; and then when cleaned the parts are put together in the twinkling of an eye, and the process of sucking up the sweet juices continues.

In Fig. 2, taken from Cheshire, are shown sectional views as well as longitudinal views of the tongue as a whole. In C, D, E, respectively we have cross-sections showing the outer and inner sets of tubes; *mx*, the maxillæ in connection with *lp*, the labial palpi, are folded together in the manner as shown, forming the large tube, through which large quantities, when available, are taken. At *c d* in G is shown the groove I have already referred to, and through which minute quantities are drawn. At *s d* in G is shown one of the side ducts through which a still larger amount may be drawn. All three of these close by folding, forming tubes. At B we have a

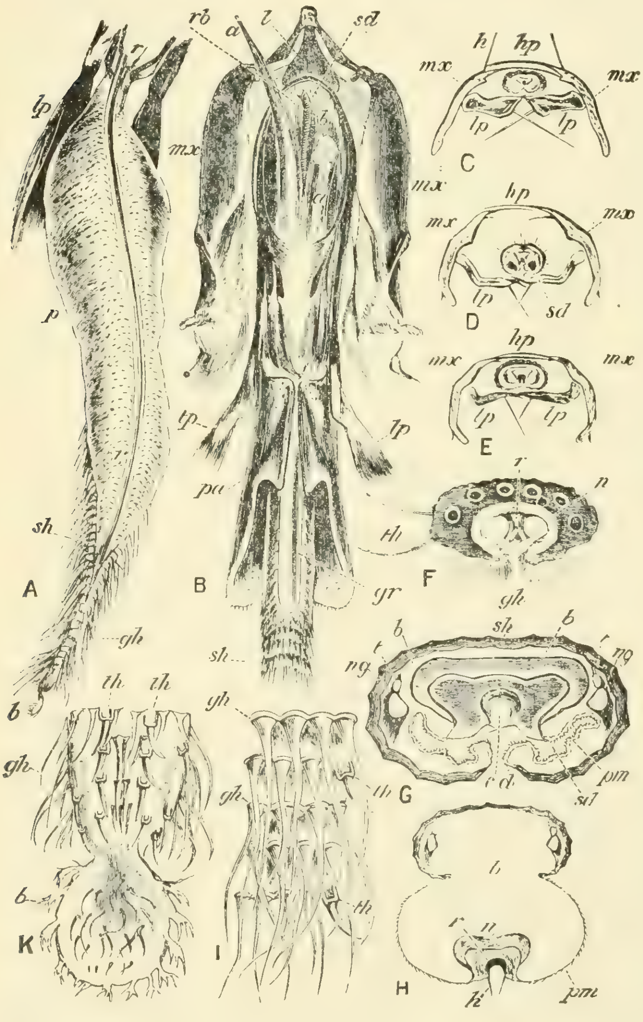


FIG. 2.—SECTIONAL VIEW OF THE TONGUE OF A BEE.—AFTER CHESHIRE.

portion of the tongue, showing how it is attached to the mentum. At A we have the same view, but the tongue is distended, according to Cheshire, by forcing blood into it, so that in a sense the tongue is turned wrong side out for the purpose of cleaning. At K we have the end of the tongue, or what is sometimes called the "spoon." Delicate hairs (they do not seem very delicate in this view) serve to assist the tongue in gathering up its sweetness and enable the liquids, by means of capillary attraction, to be drawn upward into the central groove and side ducts already spoken of. We have then four channels for the conveyance of nectar through the proboscis; viz, C, D, E, Fig. 2, when large amounts of nectar are to be gulped down, and *c d* and *s d* in G for smaller amounts.

For the information given above I am indebted to both Cowan and Cheshire, who, it seems, have drawn on others as well as from their own extended studies and investigations.

CONVERSATIONS
WITH
DOOLITTLE

BEE-KEEPING FOR FARMERS.

"Good morning, Mr. Doolittle. I am a farmer, and I am thinking of adding, to general farming, a few bees next year: so I came to see you and have a little talk regarding hives for farmers, and something about how to manage them and the bees. What hive would you think it best to adopt? I wish to make the hives this winter during leisure hours."

"I think your name is Lyon; and if so I would say, in answering your hive question, or in giving my views on the same, that very much depends upon how Mr. Lyon intends to keep his bees, and what time he expects to spend on them. If he intends to hive the swarms only when they issue, and put on the surplus boxes when the white clover commences to bloom, paying no other attention to them (which is the way the average farmer cares for bees), then I would say that the box hive, known as the Miner hive, is as good for you as any hive in existence."

"Why do you single out the Miner hive from all other box hives or log gums of the past?"

"Because, should you ever wish to sell your bees they will bring from fifty cents to one dollar more per hive than they would in any of the others, on account of the provision Mr. Miner made by way of slats set on edge, so that the bees nearly always, if not quite, build their combs straight and true, so that, when they come into the possession of a practical bee-keeper, they are easily transferred to any of the movable-frame hives."

"But suppose I wish to work my bees to the very best advantage, and give them all the needed care, then what would you advise?"

"If you are willing to give the bees the attention which they require, which is far less for each colony that you would give one of your hogs or cows, then I would say that nothing short of a good movable-frame hive will be good enough for you."

"What frame hive would you advise?"

"You have not told me in what part of the country you live, so I will say that much will depend on your locality."

"Well, without telling you just now regarding this matter, what would you advise for the South?"

"If you live in the South, then what is known as the Langstroth hive is as good as any."

"But suppose I live north of this latitude, which I think is about 43 degrees, then what?"

"Then I should prefer a hive having a deeper frame, especially if the bees are to be wintered out on their summer stands."

"Why?"

"For the reason that it is believed that bees can withstand the cold better where they can cluster as nature prompts, which is in a sphere about a foot in diameter, and they will build up faster in the spring, here at the North, when in a deeper frame than the Langstroth. However, the Langstroth hive is a good hive for all latitudes south of 43°, when properly managed, while some prefer it still further north."

"Successful wintering would be quite an item, I should think."

"Yes; the one item of safe wintering, which means strong colonies in the fore part of the season, is the main thing to be looked after where the crop of white honey comes early in the season, as it always does where white clover is the chief source of supply; and the hive which helps to accomplish this item the most surely and perfectly is the one the farmer, or any other person keeping bees, should look after. Lots of bees in time for the honey harvest means success to their keeper."

"You said, 'the hive which helps in securing bees,' etc. What is needed besides the hive?"

"Good management is needed, and this is much above the hive. The early management of any hive consists in knowing that the bees have a good queen, plenty of stores, and that they are tucked up warm and secure at the top of the hive."

"But I have heard of bees doing well in hives with holes and cracks in them."

"Yes, bees will build up, even if the top of the hive has cracks in it; but if you will stop to think a minute you will see that the heat which passes out at these cracks takes just so much warmth away from the cluster, and causes the bees to burn just so much more fuel, which in this case is honey, to keep up the required heat necessary to raise brood, which many experiments show is from 94 to 98°. Therefore it pays well to see that the top of the hive is tight in early spring."

"Why is it necessary to have plenty of stores, or food, as you spoke about? If you kept them from starving is not that all that would be required?"

"Plenty of stores are needed; for if the bees have to scrimp on account of fears of starvation, not nearly as much brood will be raised as there would be were there so much honey in the hives that the bees could use it lavishly. A hive which has twenty pounds of honey in it on the first day of April will, as a rule, give from one-third to double the bees at the commencement of the clover harvest that the one will which has only from three to five pounds, providing the latter does not starve altogether."

"Well, what about the good queen you spoke of?"

"A good queen is an actual necessity; for, tuck up the hive as well as we may, and give the bees any quantity of stores, yet if the queen is a poor or a failing one there will be only enough bees raised to keep up the dying population of the hive, resulting in little or no honey to the owner."

"What more will the farmer need?"

"Seeing that the bees have the three requisites spoken of, little more will be needed from the farmer till swarming time arrives. When the first swarm issues you will mark the date on the hive so that on the eighth day you can go in the evening and listen for the piping of the first young queen, which usually hatches some time during the seventh day, where the swarm issued on the sealing of the first queen-cell, as it generally does."

"What do you mean by piping?"

"When the bees desire to send out an after-swarm they cluster about all the queen-cells in the hive, so that the first hatched queen can not get at them to destroy them. This seems to enrage the queen that is out of her cell, and she utters some shrill notes, sounding like teet, teet, teet, several being uttered in quick succession, which is easily distinguished from all other noises in or about the hive."

"When this is heard, what then?"

"If you hear the queen piping you may know that if the weather is pleasant a second swarm will issue the next day, unless thwarted in some way, and also that there is a young queen out of her cell and at liberty in the hive. If this piping is heard, the hive should be opened early the next morning, and every queen-cell cut off, which will prevent any after-swarms issuing from that hive."

"Is it easy to find these queen-cells?"

"Yes, fairly so; but to be sure that none are missed by being covered by the bees, it is well to shake the bees off each frame, shaking them in front of the entrance so that they can run into the hive again."

"When should I put on the honey-boxes?"

"The surplus arrangement should be put on each hive that has its combs filled with brood, as soon as the honey harvest commences, no matter whether the bees have swarmed or not; and upon all others as soon as there are bees enough in them so that they can keep up the necessary warmth for brood-rearing with the surplus arrangement on."

"How about taking off the honey?"

"As soon as many of the sections are filled they should be taken off while snow-white, as the appearance of the honey in market has much to do with the price we receive for it. But I have an engagement to meet at our village an hour from now, so I can not talk any longer, if I get there on time. But one word more before I go: No one should think of keeping bees without some one of the many good bee-books of the present. One of these will tell you all about hives, and the management of bees, much better than I can were I to talk with you two days. Get one of Root's A B C books and see if I have not told you right."

HEADS OF GRAIN FROM DIFFERENT FIELDS

A SHORT-TUBE CLOVER IN SIGHT; HOW THE BEES WORKED ON IT.

I am very much interested in the effort you are making for long-tongued bees and short-tubed clover. I for one believe that the goal can be reached from both directions; i. e., by combining the two. In 1898 I noticed my bees going and coming in one direction, namely, southwest. Thinking to find what they were working on I followed in that direction, and found very few bees at work on or near the ground, and no timber of any consequence on which they could work. About a mile and a half from home I found a clover-field fairly swarming with bees, while a clover-field of 30 or more acres with one side of it, not 50 yards from a part, and not more than 40 feet from the remainder of my lot of 30 hives, had very few bees on it. Some two or three days after, I noticed the bees stopping work about noon, and taking my wheel I rode around and found my clover-field laid low. When the second crop came in bloom I again noticed the bees in particular, and found them working on this same field, although the field across the road from my home contained many more bees than on the first crop. This fact alone caused me to decide that I wanted seed from that particular field. When the neighbor hulled his seed, by offering a few cents above the market price I obtained it, but had to take the entire crop to get any. I managed to sell some of it to some of my neighbors, and some more to my father, who lives some ten miles southwest of me.

The crop of seed sown near me in 1899 was almost a failure in catching, and what did catch was winter-killed last winter, while some fair fields were left over at my father's.

My prospects for honey last spring were any thing but bright for 30 colonies, so I decided to divide up territory. I took five of my weaker colonies and one strong one to my father's; 4 were taken to a place where there were a fair number of basswood-trees, although badly cut by the canker-worm. Well, this fall I had 24 colonies to feed, nearly all being at starvation's door.

My father said when he cut his hay he never saw bees thicker on a buckwheat-patch than on his clover. I made a trip to see how they were doing, and had the pleasure (?) of helping him haul up his hay; but when that clover-field bloomed for seed, those bees filled up every thing tight; and I was surprised, on going down one day, to find them so. Now, I feel that *that* clover had something to do with it. But the weakest colony taken down there built up the strongest, yet could not have been fuller of honey than the other five.

J. WARREN ARTHUR.

Beatty, O., Nov. 12.

[It would appear that the clover on which your bees worked so during the summer of 1898 was of the short-tube variety, because you say that there was another field near by of another clover which the bees would hardly notice. If your father still has some of that seed we should like to get some of it. What you or your father can spare of it would probably be taken off your hands by bee-keepers. I don't object to giving a free advertisement to any one responsible and honest, who has a short-tubed clover. We are fast getting the bees with long tongues; now let us reach for the short-tubed red clover.—ED.]

CLIPPING BY HOLDING ONE WING.

Friend Root: —There have been so many queen-clipping methods given, and all the best, that I am disposed to give mine, which I have practiced for 16 years and never injured a queen yet. When the comb is found containing the queen, I take hold of the center of the top-bar with the right hand, so as to turn from side to side readily, as is often necessary, and with the thumb and fore finger of the left hand I catch her by one wing and place the comb in the hive, or set it by the side of the hive. Then with a pair of old shears of small size, worn down to slim points, I clip the loose wings, and she is placed on top of frames, without injury. I would not dare to catch her by the thorax with the wire fork, nor even my fingers, for fear of injuring her, which could be very easily done, as it does not require very much pressure to do so; and unless one's nerves were *very* steady there would be danger of pulling a wing off with a dull knife. I do all my clipping as soon as the weather is settled in the spring, and carry the shears with me for this purpose; and when my yard is gone over, all queens of past year's rearing are clipped, hence it is not necessary to carry shears all summer or do the jack-knife act either. There have been complaints in the past of the queen cramping when held by the wing; but I would pay a dollar to see one.

Hillsboro, Wis. ELIAS FOX.

[There would be more danger of maiming a queen, from my point of view, by catching her by one set of wings — much more so than to catch her by *both* wings, and then hold her by the thorax. It would take quite a strong pressure at this point to do the queen injury. Try the Miller plan outlined on page 838, Nov. 1, and you will be convinced that it is not so bad as you think. I have tried catching queens by one set of wings, and invariably she would, with her strong legs, tug and twist until something had to let go—either my fingers or the wings at the sockets.—ED.]

HOW MANY POUNDS OF HONEY DOES IT TAKE TO MAKE A POUND OF WAX?

This is an old question that every now and then bobs up in a new phase, as in the experiments reported by Dr. Miller in one of his Straws, Nov. 15, made by editor Pender. I think the conclusions from this experiment faulty and unreliable. It is generally agreed that wax is a natural secretion of the bees, produced by the digestion of the food they consume, somewhat similar to the way that the fat that lines the kidneys of a pig is produced by the food consumed and digested. Bees may have the power to regulate the quantity of wax necessary for them to produce; but we don't know this, and perhaps never will. But their instinct would certainly lead them to consume the food necessary to produce wax whenever it was likely and imminent that wax would be needed, as in the case of swarming out to make a new home. There is no doubt in my mind that the bees consume an extra quantity of honey in the old hive just before they leave it, for the very purpose of secreting wax, and that they have a supply of wax already accumulated on their bodies before they leave the old hive for a new home.

If this is correct, it is very fallacious to estimate the amount of honey required to make a pound of wax, simply by the amount of honey the swarm carried away from the old hive in their honey-pouches, in comparison with the weight of the new comb they build before going out after more food. Just as well take a pig that has been well kept, and make it fast for a few days, and then feed it a certain amount of corn, and weigh its kidney fat to find how many pounds of corn it takes to make a pound of lard.

More reliable experiments than this must be made before it is proven that it requires only four pounds of honey to make one of wax. THADDEUS SMITH.

Pelee Island, Ontario, Nov. 24.

[This is a matter that I wish our experiment stations might take up. Prof. Gillette, of the Colorado Experiment Station, who has done such good work in testing foundation, perhaps may see his way clear to take up this line of work.—ED.]

FLAT CANS FOR CARRYING SYRUP TO OUT-APIARIES.

Friend Root: —You ask, in your Oct. 15th issue, why I use a flat shallow can for carrying sugar syrup to out-yards. Why, the best reason in the world, as I think. Because a flat can will ride so much better in a three-spring wagon. A tall can carried over some of the steep and rough roads I have to carry syrup over would be in danger of tipping over, or at any rate keep me in a constant worry for fear of its getting upset.

In feeding some 500 or 600 pounds of sugar last year I do not know that I lost a pound by granulation where vinegar was used in sufficient quantity ; but it must be strong vinegar. This year I have used much more than one tablespoonful of vinegar to ten pounds of sugar. I have no water near any of my out-yards, and I have thought it a great saving of time to take my syrup from home. Where many thousands of pounds of syrup are to be fed I have thought the more condensed the greater the saving of time. But you speak so highly of feeding syrup half sugar and half water that I propose to try it when I need to feed next time. J. E. Crane.

Middlebury, Vt., Oct. 24.

[If you make your syrup by the cold process—mixing sugar and water in an ordinary extractor-can at the out-yard, you don't need to haul the sugar and water mixed (syrup) but just carry the sugar alone. Arriving at the out-yard, pour the sugar into a common honey-extractor, add water equal bulk, and turn the extractor-handle till sugar dissolves. You see there is no need to haul water from home to the out yards.—Ed]

EDITORIAL BY E.R. ROOT

Now will be a good time to renail hives that may be gaping in the corners, and to put on an additional coat of paint.

While this journal is going out to its readers I expect to be in attendance at bee-keepers' institutes in Central New York.

This number contains 16 extra pages. During the current year we have given our readers about 1000 pages for $1.00. There may be better investments, but certainly this is a good one.

There never was a time, I believe, when there was such a scarcity of good honey as there has been this fall. There has been quite an upward tendency in the price of comb and extracted. These prices ought not to be lower, even with a good crop, for good honey ought to be worth the prices now asked in the market.

I hope those who are in position to do so will make close observations on the matter of sealed covers and absorbents for outdoor wintering. Some winters the latter seem to give the best result, and others the former. Let us discover, if possible, what the exact conditions are under which one or the other gives the best wintering.

The index for 1900, in this issue, is unusually full and complete. Stenog and I have been working on it long and hard, and we believe that now we have made the best index that we have ever placed before our readers. But an index is of no value unless one keeps his back numbers, and no progressive bee-keeper can afford not to do it.

When putting bees in the cellar, be sure to give them plenty of bottom ventilation, either by taking the bottom-board off entirely or giving the bees an entrance an inch or two deep and the width of the hive The wide and deep entrances outdoors should be contracted down to ⅜ inch by 8 wide. If the colony is not strong, 5×⅜ will be better.

Here we are, Bro. Hutchinson and I, at Hotel Broezel, Buffalo, N. Y., writing editorials for our respective journals. We have just come from the Ontario convention over in Canada, and to-morrow will work eastward—Bro. Hutchinson to the bee-keepers' institutes, and I to one or two of the institutes, and to the trial of the Utter Bros. in the now celebrated bee-and-fruit case.

PROSPECTS FOR A GOOD HONEY-FLOW IN CALIFORNIA.

The Union Hive and Box Co., Los Angeles, writes that California has had the finest rainstorm in years ; that it was general, and lasted nearly a week. From five to ten inches fell, seven being about the average. This is more than the entire season for two years past. They say if this is followed by any thing at all it means a good honey season. The amount of precipitation in the Northern States has also been unusually heavy this fall, so that we are hopeful all along the line.

BOTTLING HONEY.

In this issue we begin our series of articles on bottling honey. I should like to have our friends go into this subject so fully that every thing of value pertaining to it may be picked up. A knowledge of how to increase the price of extracted honey may be worth hundreds of dollars to bee-keepers. But this knowledge will avail them nothing unless an effort is made to develop the *home* market. These short winter days, when work is not very rushing on the farm, will afford a good opportunity to experiment in bottling, and to try the product on the local markets.

"KELLOGG'S PURE HONEY."

Our readers will remember that a certain brand of honey, labeled "Kellogg's Pure White Clover Honey," bearing the address Medina, O., has been sold considerably in the South and West. Several analyses have shown that it is greatly adulterated. Of course, it is plain that the venders of this stuff are trying to palm it off under the reputation of The A. I. Root Co., who do a large business in selling pure honey. We have been, for about a year, gathering facts and affidavits, and now our attorney has the matter in hand. We do not need to tell our readers that no one in this small town is putting up bogus honey. If such were the case we should know it right speedily ; and yet we are told that the venders of this so-called Kellogg's pure honey have been telling their customers right and left that these goods were put up by a large firm in Medina, O. The gall of some people is exceeded only by their greed for the almighty dollar.

DENVER TURNED DOWN BY THE RAILROAD COMPANIES.

IT looks now as if the railroad companies had turned down Denver in that they have refused to accept the proposition of the G. A. R. people to hold their encampment in that city providing that a certain rate could be secured. I notice that a very strong effort is being made to pull it to Cleveland. This matter would be of no particular interest to bee-keepers except that the National Bee keepers' Association has a custom of holding its meetings at the same time and place as the G. A. R. The matter rests with the Executive Board, and announcements will be made, probably, as soon as the G. A. R. decides definitely where it will meet. But even then it is not absolutely a foregone conclusion that the National will meet at the same time and place.

DOES SLOW COOLING LIGHTEN THE COLOR OF WAX?

THERE has been a little controversy between the editor of the *American Bee-keeper* and the editor of the *American Bee Journal*, on the question as to whether slow cooling of melted wax will make a dull-colored article a bright yellow. Without desiring to mix up in the fray I will simply say that I rather take the position of Mr. Hill. Slow cooling can have no other effect than to allow certain particles of dirt to settle; and after these are separated out, the difference in color of the wax will be too slight to cut much of a figure. The only way I know of to make a dull-colored or dark-colored wax yellow is to use a little sulphuric acid—a very little—when the color will be brought to a bright lemon yellow. We render anywhere from forty to fifty tons every season. And we rely on the acid almost exclusively to get the color.

THE ONTARIO CONVENTION AND THE BANQUET.

THE Ontario Bee-keepers' Convention of Canada was held at Niagara Falls, as scheduled. While the attendance was not as large as usual, owing, probably, to the poor season, the spirit of the meeting and the character of the discussions were of the best. At the close of the stereopticon work on the evening of the second day, a banquet in honor of the ex-presidents of the Association was held at Hotel Savoy. We sat down to the board at about 10 P. M. After we had partaken of the things that delight the inner man the tables were cleared, and then began the feast that feeds the intellectual man. We drank (water) to the health of "our good Queen," and then all joined in the familiar song of "God Save the Queen." The first toast was offered by President Newton. This was followed by one to the Americans, by W. F. McKnight. It gave him pleasure, he said, to see the increasing attachment between the two great nations, England and America. He spoke feelingly of the Union Jack and of the Stars and Stripes, and he hoped that the day would soon come when they would float side by side, and would kiss each other in each other's fond embrace. He was greeted by frequent rounds of applause, both during and at the close of his eloquent speech. Responses were then called for from the two Americans who were present—Mr W. L. Coggshall and E. R. Root. These were offered, and then we drank to the health of the ex-presidents, of whom a large number were present. Another national anthem was sung, after which we listened to some delightful speeches from the aforesaid ex-presidents.

The theme of the evening, started by Mr. McKnight, of "England and America," seemed to run all through the speeches, although there was occasional reference to the effect that the English flag should be "on top." We listened to an eloquent speech from the mayor, who was an honored guest, and to members of the press The meeting finally broke up at 2 o'clock in the morning, after a most delightful evening of speech and song.

I shall endeavor to give other snap shots of the convention from time to time.

A VISIT FROM F. E. BROWN, OF CALIFORNIA; AN UNCAPPING-MACHINE.

LAST week we were favored with a short call from Mr. F. E. Brown, of Hanford, Cal. Mr. Brown is secretary of the Central California Bee-keepers' Association, and is manager of some 700 colonies, of which number he owns 150. He has had a very large experience in extracting honey, and during his short stay here he gave us a number of pointers on extractors and uncapping-cans. He said that the thing we needed now is a good uncapping-machine; that if we had *that*, it would pay to run extractors by some sort of motor. He was much pleased when I told him that we had such a machine, and had sent it to Colorado to be tested, and that, if the same proved to be satisfactory, we would put it on the market. But of this, details will be given later.

Mr. Brown prefers an uncapping-box to an uncapping-can. It should be made of wood, he thinks, so that the uncapping-knife can be cleaned by scraping on the wood next to the box. A metal can or box is objectionable on this account. He preferred to have the box oblong so that combs, as fast as they are uncapped, can be stood on end at one end of the box, ready for the extractor. Combs that have been uncapped must either go directly into the extractor or into some receptacle to catch the drip, and he knew of nothing better than the uncapping-box itself.

Perhaps I might state that the uncapping-machine that we are testing is the invention of Arthur C. Miller, of Providence, R. I., who is also the inventor of the first practical hot-plate foundation-fastener. He has tested the uncapper carefully, and is very much pleased with its workings. The machine is now in the hands of R. C. Aikin, president of the Colorado State Bee-keepers' Association, and who is also a vice-president of the National Bee-keepers' Association. Mr. Aikin has very thick honey, and does a large extracting business. If the machine will work satisfactorily for him under his exacting conditions it will work anywhere.

OUR HOMES,

BY A. I. ROOT.

Go ye, therefore, and teach all nations.—Matt. 28:19.

When Jesus laid this injunction on his followers, very likely it did not occur to them then that, instead of going all over the world, away across the seas, and to the remote islands, in due time all nations should come to us instead of our going to them; and I am afraid that a host of Christ's followers at this present day hardly realize or comprehend that mission work means doing missionary work among people here at *home*, that God in his infinite wisdom has sent to us. I fear we are all apt to have more enthusiasm for going across the seas and in fitting out missionaries than we have for starting missionary work among our next-door neighbors; nay, further still, for starting and carrying on missionary work right among those under our own roof, the inmates of our own households, and, I should like to say, among those who sit with us at our own tables. But I am going to touch on this matter of who shall sit down at the table with us at our daily meals, further on.

I have already told you that one of the children God sent to our home, the one we used to call Blue Eyes, was a natural teacher. In her childhood she gathered the neighbors' children about her and "taught school." When she was old enough she served an apprenticeship, if that is the way to term it, under that grand good woman who has charge of our Medina primary department, Miss Sarah Smith. Some of you have read her writings. Well, Constance declared for several years that teaching was to be her lifework; and after she became a follower of Christ Jesus she felt so sure she was called into the work of foreign missions that she made arrangements to take a course in college with that end in view. Man proposes, but God disposes; and instead of going to Africa or some other foreign land she is now heart and soul devoted to leading and directing the mind and body of her own little prattler, her own boy. I hope and pray, however, that this boy is not going to take all of her zeal and energy. I said God disposed things in such a way that she did not go to Africa; but the great Father was planning, and is planning in your life and mine, dear reader, to give us an opportunity to use all our powers and strength for his honor and glory.

Here in Medina we have had to meet the problem, as they do all over the world, or at least almost all over the world, in getting help for the women-folks in the home, as well as help for the men-folks on the farms and in the factories. There is a peculiar difficulty, however, in getting help for the mother—getting help to work *with* the mother right by her side, doing the very tasks that she does herself. There are plenty of girls to work in factories; plenty to work in stores; plenty for the offices. In a recent number of the *Country Gentleman* a pitiful story was told about the girls in the great city of New York, who are working—yes, thousands of them—in offices, and especially typewriters, for just enough to pay their board—no more. This article suggested that, when these girls complain to their employers that they can not keep soul and body together on such small pay, the employers have heartlessly hinted that the girls must—well, let us say barter away their good looks or their youth for the wherewith to dress decently and find lodging. The article was a vehement protest against the heartlessness and cruelty of the average business man in all the great cities. Yes, there is complaint right here in Medina that the dry-goods men pay their women clerks barely enough to enable them to pay for decent board and lodging.

Now, it rejoiced my heart to see a footnote at the end of the article, by the editor of the *Country Gentleman*, suggesting that these girls could get places, every one of them, where they would be furnished both board and lodging, and two or three dollars a week pay besides, for helping the tired mothers in our homes, but they will not do it; yes, it rejoiced my heart to see the editor make a vigorous and vehement strike just where my mind was running as I read the article.

Now, then, friends, who is at fault? Is it altogether the fault of the girls? The mothers that need help are, a great part of them, professed follows of Christ Jesus. May God be praised that, during the years past since I have been permitted to write these Home Papers, I have had an insight into hundreds of homes; and I have become acquainted by correspondence with many *more* Christian mothers, and I am afraid that these Christian mothers are, at least *somewhat*, at fault. Many of them, I know, are preaching the gospel to their hired help, and sometimes the hired help is not only ungrateful, but saucy and impudent. Yes, I know too, it is sometimes the other way. The hired help is a good many times a patient, professing Christian. God knows how I wish it were oftener the case; and sometimes this patient professing Christian is obliged to put up with proud, overbearing, aristocratic mistresses. I do not like that word "mistresses." It does not tell what I mean. I believe God intended, in this very domestic relation which we are discussing, that the mother of the home should come nearer the relation of teacher (as in our text), and that the hired girl should be, in one sense at least, a pupil. When the bargain is made between these two, it should be understood that the mother, as the owner and proprietor of the home, should direct; and that a young woman or girl, as an employee, should work according to directions; that she should be willing to do whatever her teacher asks her to do, cheerfully and willingly.

Well, this daughter of ours commenced her mission in married life with a hired girl — at least I hope it was as I have stated it. One of the first things she undertook to do was to teach the girl not to waste the food left over from one meal to another. This she learned from her mother. And let me say right here that, through all of our married life, there has been scarcely enough wasted in our kitchen to be worth carrying to the chickens, to say nothing about the pigs. When Mrs. Root and I commenced life together we got our start by saving what many people throw away. She has learned to cook so there is almost nothing wasted; and now while we two are alone she manages so nicely that, while we both have enough of every thing we want, there is scarcely a crumb left to be given to the chickens—nothing whatever for the slop-pail.

Well, one of this daughter's first experiences was in having every thing shoveled into the slop-pail just as soon as the family were fairly away from the table. Then if she did not keep an eye almost constantly on the girl the contents of the dish-pan would go into the kitchen sink—at least every thing she could get to run into it. Even after it had been explained to her that the waste-pipes would be clogged by such a course as that, and that an expensive job of tearing up the pipes would follow, she did not seem to care much about it. By patient care and kind teaching this difficulty was mostly got over unless the girl "got mad." When she got her temper up she would begin venting her spite by dumping every thing, not excepting pie and cake, into the slop-pail.* I presume she had learned that this provoked her mistress more than almost any thing else, or came the closest to upsetting her Christian spirit. Do you say you would not have such a girl on the premises an hour? Oh! yes, you would, I think, or at least I hope you would. The girl had some very commendable traits. She was an excellent cook, nice-looking, and well-behaved (when her temper did not get the better of her). Shall I tell you what provoked her most? It was having company come so that her work would be a little harder. By the way, I am told it is getting to be quite a fashion for hired girls to demand that their employers shall not entertain company—not even their own relatives. When Mrs. Root and I visited the Hilberts recently, they tried in vain to get a hired girl. In fact, they engaged two different ones; but when they found there were to be guests there from Ohio, the girls both—and I do not know but I might as well say all—refused to come. So Mrs. Hilbert and Mrs. Root had to be hired girls themselves; and with the amount of fun they had when they were at it, I do not know but they enjoyed it more than if the girls had come. I think their husbands did, any way.

Well, dear friends, my story is getting to be a long one, and I have not yet reached its commencement. After the good women of Medina had had just such troubles as I have been telling you of (and some of them a good deal worse), they finally decided to send to some sort of an agency in the South for colored girls. First came three or four, then half a dozen, and I do not know but there are now two dozen all together here in Medina. Now, I am not going to put in a big plea for the colored race as helpers—not just yet, any way. While they have excellent constitutions, plenty of physical strength, and to a certain extent a high degree of docility and good nature, they are not just yet exactly what we want. A colored girl, only 17 years old, is now helping Mrs. Boyden; and I hope I am telling the truth when I say that Mrs. Boyden is helping this colored girl to be not only a *woman* but a follower of Christ Jesus; but her task is not altogether an easy one. I have heard people say that you must be careful how you make too much of the colored people, especially the younger ones, and I have learned some lessons along that line. When I look at them, and study the peculiarities of their race, and their general make-up, my heart is warmed toward them; but when I am told that, very soon after such a girl comes into the house (or at least it is the case with *some* of them), you must put a lock and key on every thing in the shape of eatables that you are not ready to give away, my heart rises up in rebellion. While I was in the South I was told repeatedly that these people steal, and tell lies about it, to such an extent that nobody expects any thing different. I thought it could not be true; but I have been forced to admit that these girls are bringing at least a little of this fashion into the North. Worse still, many of them do not seem to think that such conduct is inconsistent with a profession of religion or a member of the church. May God help us, and may he help them. When the matter is submitted to me, over and over again I have to say, "Lord, help me to realize and to remember that Jesus died for them, every one of them; and for this reason, if for no other, help me to be wise and careful and patient."

Dear friends, when we are moved by the missionary spirit, and think that God is calling us to foreign lands, shall we not remember that Africa is here? Yes, in one sense it is here in America, to our sorrow; and yet you know we have his precious promise that even the wrath of man shall be made to praise him.

Well, now, friends, if I should stop right here my conscience would trouble me for fear I have been a little too hard on the colored people; and therefore I shall take pleasure in calling your attention to something bright—yes, bright and glorious—opening up for them and for ourselves as well—at least I hope so.

Some time ago somebody away off across the water (I think it must have been a missionary, but I can not remember just now), asked us to procure for him a book called

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*Some of you may, perhaps, think I am making a big fuss about a small matter; and I am free to confess I had not thought so much about the waste of food I have alluded to until we had these reports from starving India. Read the letter on page 586, and then think of the life and strength and relief from the awful agony of starvation that might be saved if this one avenue of waste that is going on in the United States could be stopped. I should hardly dare to suggest that the nice and expensive food thrown away in America would feed starving India; but when we consider what a very small amount of nourishing food can be made to keep one alive, such an estimate may not be so far out of the way after all. In our large cities it has become a great problem how to dispose of the slops and sewage; and yet a great part of this tremendous bulk is made up of wholesome food.]

"Tuskegee, its Story and its Work," by Max Bennett Thrasher. Somehow or other I caught a glimpse of the letter, and I told the clerk while she was ordering the book to get one for me too, for I knew the book was a history of a wonderful work performed by Booker T. Washington, in Tuskegee, Ala. When the book was laid on my table I had forgotten all about ordering it; and it was not only one of my happy surprises, but a wonderful surprise. How I do wish you could all look at the pictures and read the book! I will straightway write to the publishers, and see what arrangements I can make to have them furnish it to you at a very low price. It was published during the current year. It has 204 pages and a large number of fine half-tone engravings printed on beautiful paper, and excellent print.

Booker T. Washington is a full-blooded negro, if I am correct. Nobody knows exactly when he was born; for, at that time, the birth of another black baby was of too little consequence to be recorded anywhere. Even when a small boy he showed a hungering and thirsting for education. I might almost say no boy ever had greater difficulties about him than this one in satisfying his thirst for knowledge. But he conquered; and even in his youth he planned not only to help himself but to help his race. As I am looking forward with pleasure to a visit to this great industrial home during the coming winter I will go very briefly over the subject just now. Whatever he learned just fired him with enthusiam to teach the same to others of his race; and while yet quite a boy he gathered a number of others who were willing to spend their lives in toil for their race, and they together started a school. They were without money, without friends, and without influence. But they had determination and the average African constitution and muscle. They put up their own buildings, first of logs, then of boards, and, as the work went on, they made brick and erected brick buildings. In some respects this work at Tuskegee is an experiment station. Some of the students take to agriculture, some to mechanics, some to machinery; and not only are they carrying on almost all trades and industries, but they have also professors in the different sciences little if any behind those that we find among the white people.

I hardly need tell you that the founder and leader is a most sincere and devoted Christian.

Very early in the work a beautiful chapel was built of brick; then a building they call Science Hall; then a department for dairy work, with students being taught exactly as we teach at the institute at Columbus, O, and in other States. Somebody has said the remarkable thing about Mr. Washington's work is that his graduates are all just so many Booker T. Washingtons on a smaller scale. And our young friend did not forget the colored *girls* by any means. Mrs. Booker T. Washington is a handsome colored woman, although a full-blooded black, like her husband — that is, if I am right about it, and she is doing for the women exactly what he is doing for the men. What a transformation! When I look at the colored girls here in Medina (and I have reason to believe, too, that they are far above thousands upon thousands in the far South), and then glance at the pictures of the neatly dressed and lady-like girls pictured in the book, I exclaim again and again, "May God be praised!" The institution now owns 2500 acres—that is, they are making use of more or less of that amount of land; and as a recognition of the services that this devoted man and his followers are doing for the whole United States, and I might as well say for the whole wide world, the government of the United States has donated some 25,000 acres. This he is to use, or the proceeds from it, as he chooses or thinks best.

Dear friends, I am almost afraid that our nation and the whole wide world are just now showing their gratitude by almost *too much* praise. Can this poor colored friend of ours, who has been so suddenly raised from abject poverty and want — can he and his followers stand all of this prosperity? Let us remember him in our prayers. I believe most of the colored people know something of this man and of this institution; and it would certainly be doing missionary work to put this book in the hands of every colored boy and girl. They ought to know the possibilities of the colored race. Sometimes I almost fear that hope has died out in their hearts when they realize that many of them, and especially the young girls, can hardly expect protection from the laws of our land. Thank God, however, that just recently our people are waking up to the importance of protecting our *colored* girls from the schemes of evil men as well as the white ones. Now, I wish you would all get this book and read it. It is as interesting as Robinson Crusoe (pardon me for the illustration), but it is every word true. Anybody is at liberty to visit the grounds and schools, and see for himself. Many of you have heard Mr. Washington speak, for he is a great orator as well as a wonderful writer. May God help us all to do our part in the glad work of preaching the gospel to every human being; and may he help me to preach the gospel of Christ Jesus to those under my own roof in my own home.

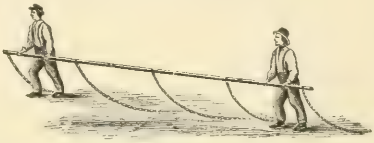
I presume the readers of GLEANINGS will be particularly interested in the department of bee culture; in fact, we have a beautiful photo, in the book, of the apiary, showing quite a plant of Dovetailed hives that came from our own establishment. Now, who do you suppose it is who is learning bee culture? Why, instead of colored *boys* it is the colored *girls*. As nearly as I can make out, Mrs. Booker T. Washington herself is the instructress, for I notice she is appointed directress of domestic industries for girls. I never thought of it before, but I do not see why colored girls should not become expert in this line. It is just as natural for them to be in the open air as it is for the bees themselves; and I notice by the photo that the greater part of them are bareheaded, not having on even a veil. I notice, however, they have smokers. Now, that is just according to my idea. Give me a cold-blast smoker, and I do not believe I should bother with a veil — at least not many days in the year. I am going to try to get this picture to show to you in GLEANINGS.

One of the difficulties with the girls in regard to helping in the home is the matter of its not being as respectable as some other callings; and much of it hinges on the fact that the hired girl seldom sits down at the table with the family. Out in the country, on the farms, the hired men usually sit down with the rest, even if company is present. As somebody must wait on the table — at least where there is a large gathering—the hired girl often waits on the guests. Now, I am just old-fashioned enough to want to see everybody in the house sit down when I do. Bring the food all to the table in the old-fashioned way, and then let us all sit down, ask a blessing, and have a merry time by *waiting on each other*. Pass the things around. May be I am old-fashioned, and may be I am mistaken; but I would have the colored girl and the colored man take their food with the rest of the household. If they are uncouth in manners and dress, fix the manners and dress, and *lift up* Africa, and every other nation in the same way. Yes, I would have the Chinaman and the Japanese too at my table if they helped me on my farm or in my own home; and I think this thing alone would make an American of either, *quicker* than any thing else. I may not, during my life at least, be able to make the black man's skin white; but if we should succeed, through Christ Jesus, in making his heart as pure and clean, say, as Booker Washington's, what would it *matter* about the color of his skin? Yes, and I would have the American Indians eat at my table too. There are quite a number of them up in the Traverse region, and I confess I have watched them many times while my heart felt drawn toward them. May God help us in our efforts to bring forward that glad time when *all* kindreds and *all* nations shall sit down together, forgetting color and nationality, at the feet of "the Son of God who taketh away the sin of the world."

HIGH PRESSURE GARDENING BY A.I. ROOT.

MARKING OUT POTATO GROUND BY MEN INSTEAD OF HORSES; MORE ABOUT IT.

When I described the method used in the Traverse region, on page 807, Oct. 15, I said if any of our agricultural papers had ever described this method I should be glad to know it. Well, I am glad to be able to tell you that one agricultural periodical *did* describe and give a picture of the operation as long ago as 1864. It appeared then in that old standard periodical, the *Cultivator and Country Gentleman*, and is now figured in their "Annual Register of Rural Affairs," page 34. They have kindly permitted us to use the cut, which we take pleasure in giving above. Permit me to explain that they gave at the same time a cut of a corn-marker to be drawn by two horses. This marker has three runners. After describing the corn-marker they explain and illustrate the chain arrangement as follows:



For cross-marking, employ the chain marker, shown in the cut. It consists of a light pole, with trace-chains suspended from it, at distances for each row, or 3 or 3½ feet apart, as may be desired. Two men take the pole near each end, and one of them, acting as guide, and ranging accurately, they walk forward, dragging the chains in the soil, making a fine smooth line for each chain. The figure represents only five chains. Six or seven may be employed without inconvenience, and the field marked off with great rapidity. By the first of these implements, a man and team will mark more than an acre; and by the use of the second, two men, or a man and boy, will mark 2½ acres in walking a mile.

In order to make the machine lighter for the men to carry, I would suggest using cords with half a dozen or a dozen links of chain at the end of the cord. The chain must be large enough, and there must be links enough, so that their weight will sink them into the soil sufficiently to have them pull a straight line. My impression is, the ground should be harrowed and floated until it is comparatively smooth. Here in Medina we use a roller just before marking. In the Traverse region I believe rollers are not very much used. The difference, probably, is on account of the soil. There are not many lumps to mash up, but there are cavities to fill. The ground should be made as smooth and level as possible by whatever means you find most convenient. If you wish to cultivate your crop both ways, then you will need to mark and cross-mark. I would suggest having the cross-marking nearer together; and I am pretty well satisfied that many times, where potatoes are cultivated both ways, the hills are so far apart the potatoes not only grow too large, especially the Rurals and Carmans, but average good land would stand having the potatoes enough nearer to give half as many more bushels to the acre. All potatoes that are in the habit of growing too large for nice cooking size should be planted closer until the size is reduced; and on our soil I have many times thought there was a positive gain in having potatoes so close to each other that the foliage soon covers the ground and keeps off the hot sun. Of course, to do this you must use manure or turn under heavy crops of clover, or, better still, turn under clover in the fall and sow it to rye, and then turn under the rye in June, and plant your potatoes.

Permit me to say again that this chain method of marking must be cheaper than marking with a horse, besides avoiding the tramping of the ground when it is in fine condition to receive the potatoes; and when used in connection with the hand potato-planter we shall picture and describe later on, it is certainly *the* plan. I was talking with a boy of eighteen in regard to this method of marking and planting, and he seemed surprised. "Why, Mr. Root, this is the only way of marking and planting potatoes I ever saw or *heard of.* How do you mark them and plant them down in Ohio?"

I mention this to show how widespread is the custom in that great potato region in Northern Michigan.

In regard to the method of friend Hilbert, of Bingham, Mich., in getting his heavy crops of clover where seed is sown in August among corn or buckwheat, he uses about 12 lbs. of seed to the acre, as nearly as he can make it. He uses a broadcast seed-sower, and goes through each row of corn. After that he cultivates both ways to cover the seed. I was through his cornfields just as the seed was coming up. He secures a very even and pretty stand; and when I last saw his clover, near the first of November, it looked so handsome I was not surprised that it wintered over all right. He put clover seed in the same way among all his buckwheat; and after the buckwheat was cut and taken off the ground, the clover looked even handsomer than it did in the corn. In fact, Mr. Hilbert's whole farm is green all winter long, either with clover or rye.

THE PEACH-LEAF CURL; ITS NATURE AND TREATMENT.

This is the title of a beautiful new book just published by the Department of Agriculture, Washington; octavo size, over 200 pages, printed on beautiful paper, illustrated with fine plates. Some time ago somebody told me the curl was probably caused by cold weather in the spring, and probably did not hurt the tree very much. I thought this was a mistake. Our scientific men have now, after persistent study, decided that it is a parasitic fungus; and that it is now causing a loss of probably not less than *three millions of dollars annually.* It has at the present time a worldwide distribution. Rains and cold weather tend to increase the severity of the trouble, but are not at the bottom of it. Orchards near large bodies of water, and in low damp situations, are more subject to curl than those in dry elevated situations. I presume this is one reason why peaches do so much better on the very tops of our highest hills.

The curl was first treated in California successfully as long ago as 1880 to 1885. Copper sprays were the most successful, although there are many other substitutes used. A Bordeaux mixture consisting of 5 lbs. of copper sulphate and 5 lbs. of lime poured into 45 gallons of water gives the best results. Over 1000 per cent gain in the fruit set has resulted from the use of some of the more effective sprays. The trees should be sprayed each season, even if they are not expected to bear, as the loss of a crop of leaves is shown to result in as great a drain on the trees as does the maturing of one-half to two-thirds of a crop of fruit. Cyclone nozzles with lateral or diagonal discharge are best adapted to the work. Winter spraying does very well, but spraying seems to do most good if applied from three to four weeks before the opening of the blossoms. The best time is during calm dry weather, during the middle of the day, in order to avoid dew or frost on the limbs as much as possible. Some of the choicest varieties, such as the Elberta and Lovell, are seriously affected; but many times a *single* treatment has entirely prevented the disease on these varieties. I think we may safely set it down that any thing that injures the foliage of any plant or vegetable, in any way, seriously interferes with the crop. Whether it is potatoes, peaches, or any thing else, take care of the foliage. Keep it bright, green, thrifty, and luxuriant. Protect it from insects, from fungus, and from blight, and you will be pretty sure of a crop. I can not determine whether this book is sent anywhere free of charge or not, but you can find out by addressing the Agricultural Department, Washington.

Permit me to say that the above remarks were taken mostly from the summary, and I do love to see a summary at the end of any bulletin. A great many times, when we can not take time to go over the facts and figures through the books, we can read the summary and get at the conclusions in a very few minutes.

SPRINGS—HOW TO CARE FOR THEM WHEN USED FOR WATERING STOCK; SOMETHING FROM THE DEPARTMENT OF AGRICULTURE, WASHINGTON.

I have before remarked, that all my life I have been interested in natural springs. When I was but little more than four years old I used to enjoy bringing spring water for my father when he was thirsty. In my travels I have frequently noticed how shiftlessly springs were cared for. For instance, the main source of that spring on my farm in the woods has been literally poached up by the cattle tramping in the ground when they went there to drink. Their droppings are mixed and poached up with the muck surrounding the spring, and my first job on my next visit will probably be to dig out that spring and wall it up and fence it up, and make it wholesome; and then I am going to fix, at my own expense, a nice drinking-place for the cattle, even if said cattle do belong to somebody else. I do this for the privilege of having pure water for my own use. Well, in answer to my inquiries, from the head of the government I received the following very valuable letter. See if you do not agree with me.

U. S. Dept. of Agriculture,
Office of Irrigation Inquiry,
Washington, D. C.

Mr. A. I. Root: — Regarding your question as to publications on how to open up springs and manage them so as to bring water into troughs where the stock can drink without contaminating it, I have to say, that, in the State where I live, that is the business very extensively gone into by the cattle and sheep men, and I think it might be well to give you a pretty full description of how the matter is managed and how the stock fare where it is not managed properly.

A stockman having what is called a range, which is a tract of land generally 40 or 50 miles in length by about 15 to 20 miles wide, upon which he attempts to keep his herd grazing by means of horsemen watching them, the springs are inclosed by fences strong and high enough to prevent the stock breaking them down. The spring is dug out clean, all the mud which usually collects about such an orifice being removed, and then is walled with stones, those most generally used being lava rock or granite. The spring, being nicely walled, is covered over by slabs of stone, and upon them earth is placed. The water is led out from the spring, so arranged, by means of pipes, the usual gas-pipe, and carried far enough to reach outside the inclosure about the spring, where strong troughs are placed, raised about two feet above the ground, and they are arranged to be one foot wide and one foot in depth, and 12 to 16 feet long. These troughs are placed in rows in such a way that the excess of water from the upper trough, instead of overflowing, is carried to the next trough, and so on through the series. Finally the waste water is led away by means of a drain, which is usually paved with stone to prevent its becoming muddy.

I know of several cattle-ranges supplied in this way, and have been led to admire the fine condition of the stock upon them. On the other hand, those cattlemen who avoid the expenditure and labor necessary for putting their water supply in this condition are continually attacked by some form of blood-poisoning, the common form being anthrax. I have passed by the water-holes on some ranges, and found them tramped into a mass of mud several hundred feet across, and have counted as many as fifty head of cattle lying in the mud dead, the living ones obliged to drink the water from this mud and the carcasses. It is no uncommon thing to hear of a certain herd being attacked by anthrax, and almost wiped out of existence, and in every case it is where the water supply has not been properly attended to. Where it is known that the water below the surface will flow to the surface with sufficient force to form what is called an artesian well, and if the distance to the water is not very great, it is usual to drive a two or three inch gas-pipe down to the supply. In this way many cattle-ranches are furnished with good pure water, the pipes being three or four feet above the ground, continually flowing over into a series of troughs arranged to keep the ground about the pipe from becoming muddy. The ranch of the Hon. Theodore Winters, in Washoe Valley, Nevada, is a fine example. He keeps a large amount of blooded stock, both horses and cattle. He has sunk at various points these wells, varying in depth from 150 to 350 feet, and thereby is brought to the surface a continual supply of water. The land where these wells are sunk is gravelly and sandy, and therefore never becomes muddy through the flow of water and he does not make use of this trough system for that reason. I think that nowhere in Nevada or the West can be found a ranch so well supplied with good pure water for stock, and at the same time a more healthy herd of stock, horses, cattle, and sheep. There might be cases in which your spring water would need to be conveyed through a pipe to a water-pool. This is a contrivance frequently made use of in the West, and works well. The prime condition to be attended to is to secure a clean orifice for the discharge of the spring water; and, if possible, to cover that over to avoid its contamination by dust from the atmosphere, dead leaves, and other sources of filth which will reach open wells, and the pool should be paved with stones.

I think if you have new ideas on the subject it would be well to publish a book, as you propose, and I should be very glad, in case you do, to be the recipient of a copy. I believe in furnishing thirsty humanity and thirsty animals with the proper kind of drink, by which I mean pure water, and to furnish it *ad libitum*. Very truly yours, CHAS. W. IRISH,
Chief of Irrigation Inquiry.

Permit me to add right here a hearty amen to the concluding sentence in the above very valuable letter.

SWEET CLOVER — ALL ABOUT IT IN A NUTSHELL.

We clip the following from the New England *Cultivator*. It has more boiled-down truth in it than we have seen in a long time in regard to sweet clover:

> A Missouri correspondent of the Kansas *Farmer* says of the Bokhara (or sweet) clover that he thinks it one of the best forage-plants for the arid regions of the Western States, and that cattle eat the hay in preference to any other. It will grow on soils where nothing else grows, and will soon make them fertile enough to grow other clover. It will kill out all weeds and small bushes, and take complete possession of the land; yet as it is a biennial it can not become a pest if mown before it goes to seed, as it dies out root and branch in two years.

BELGIAN HARES BEFORE THE SECRETARY OF AGRICULTURE, WASHINGTON.

We clip the following from the report for 1900:

> Much interest in the Belgian hare has been developed during the last three years, especially in California, Colorado, and other Western States. But however valuable Belgian hares may be for meat or fur, their introduction in large numbers is accompanied by a certain element of danger which should not be overlooked. Some are sure to escape, and the State Board of Horticulture of California has estimated that several thousand of the animals are already at large in the State. If they increase as rapidly when at large as they do in captivity, they will undoubtedly become a source of danger, and stringent measures may be required to keep them under control. Still more dangerous would be the introduction of the Belgian hare into Porto Rico, where the question of its acclimatization has already excited interest.

THE ARMY CANTEEN — A HAPPY SURPRISE.

When our dailies recently announced that a bill had just passed the House, absolutely throwing the canteen out of the army as well as from the navy, I think I am right in saying it was a glad surprise to the temperance friends and almost everybody else the world over. It made me think of Our Homes for Nov. 15, where I said there were unseen and unknown agencies at work for temperance and righteousness. In the Cleveland *News and Herald* for Dec. 8, the whole thing is summed up so much to my notion of things that I give it here entire:

> SHOULD GO OUT OF THE LIQUOR BUSINESS.
>
> The adoption by the House of Mr. Littlefield's amendment to the army reorganization bill, absolutely prohibiting the sale of liquor upon the military camps, reservations, or transports of the United States Government, thus abolishing the army canteen, will satisfy a growing popular sentiment against the sanction of the liquor-traffic in any form by the government. Whether it makes for temperance among the troops can be demonstrated only by the operations of the law.
>
> Everybody who believes that it is grossly wrong for the government to be responsible, directly or indirectly, for placing temptation in the way of its soldiers, will rejoice at the action of the House, and hope for similar action by the Senate; and even if the abolition of the canteen leads to an increase of drunkenness by forcing the soldiers to go outside of their camps, barracks, and reservations for a greater indulgence in the use of intoxicating liquors than would have been resorted to if all purchases were made through the canteen, it will not be possible to charge that the government is directly responsible.
>
> Congress should go further than to prohibit the sale of liquor at army posts and camps, and upon government transports. The sale of liquor should be prohibited at the capitol building in Washington, in the cafes that are patronized by the members of the House and Senate. It is shameful that the sale of intoxicating liquor should be permitted in any building under government control, and which is supported by the money collected from all the people. It is time for the government to sever its connection with the liquor traffic entirely.

I was really amused to read that Grosvenor, of Ohio, said that, while he did not think it was the best thing to do, and he did not believe it would aid temperance in the army, yet because the *people* were making such a clamor about it he had voted to abolish the canteen. Thank God that public opinion has for once at least triumphed over the beer business and over all the money they have back of it.

SOMETHING STILL FURTHER IN REGARD TO THE CANTEEN.

Charles Dick, who was given just one minute, improved that minute in giving before the House the following gem :

Mr. Chairman, the gentleman from Texas (Sladon) is wrong when he says that all army officers testify to the wisdom of the sale of liquors at the army canteen; on the contrary, we have the testimony of General Miles, General Shafter, General Wheeler, Surgeon General Sternberg, and many other officers who regard it as demoralizing to discipline, and as interfering seriously with the efficiency, the health, and the service of the soldier.

Contrary to the expression of the member from Texas, and taking decided issue with him, I insist that the *mothers* of this country, who give up their sons to the army of the United States, have the right to petition the American Congress ; and that these appeals to protect their boys from undue temptation ought not to go unheeded. (Loud applause.)

The gentleman from New Jersey is wrong when he assumes that this amendment aims to destroy the army canteen. Its simple purpose is to keep the canteen from being converted into a saloon, and does not interfere with any of its social features.

The overwhelming public opinion which brought this question into the House at the close of last session has not changed, nor have the conditions it was intended to affect. The amendment may not accomplish all its friends expect of it, but why shall we legislate to encourage an evil ? It is not a function of our government to engage in the sale of intoxicating liquors.

Mr. Chairman, consistent with the report of the Committee on Military Affairs at the close of last session, and in which action I joined, I shall support with my vote the amendment of the gentleman from Maine, and urge its adoption by the House. (Applause.)

SPECIAL NOTICES BY BUSINESS MANAGER

MAPLE SYRUP.

We can still furnish very choice maple syrup in one-gallon cans at $1.00 each, $9.00 for 10. Barrel lots of 20 gallons or over, 85 cts.

HONEY.

We have no comb honey to offer at present, but have a large stock of extracted, and shall be pleased to hear from shose in need of any. Since our last issue we have received a carload of light amber from California, in 60-lb. cans, which we offer in 5-case lots or over at 8 cents a pound. We have also some choice white basswood from Wisconsin, in barrels of about 360 lbs. each, at 9 cts. We have other lots also, and will cheerfully mail samples and price to those interested.

CHANGES IN PRICES FOR 1901.

In our announcement of changes in prices for 1901 in last issue there were several tables of prices crowded out. These are given below.

TIGHT-SEAL COVER PAIL.—Page 27.	Capacity, lard	— honey.	Price 1	10	100	Wt. 100
No. 1 seal-cover pail.....	1 lb.	1½ lbs.	8	75	6 50	45
No. 2 "	2 lbs.	3 "	9	85	7 50	60
No. 3 "	3 "	4½ "	11	1 00	9 50	70
No. 5 "	5 "	7½ "	13	1 20	10 50	90
No. 10 "	10 "	15 "	18	1 50	14 00	140
Improved Dadant pail..	5 "	7½ "	10	90	8 00	

SQUARE CANS.—Page 27.

No. in a box.	Capacity of each can in gallons,		in honey.	Price of 1 box.	10 bxs.	Wt. of 1 box.
1	5-gal.	can boxed	60 lbs.	$ 50	$ 4 40	10 lbs.
2	5-gal.	"	60 "	80	7 50	15 "
10	1-gal.	"	12 "	1 50	14 00	20 "
12	½-gal.	"	6 "	1 50	14 00	20 "
24	¼-gal.	"	3 "	2 40	23 00	25 "
100	1-gal.	"	12 "	12 00	110 00	110 "
100	½-gal.	"	6 "	10 00	90 00	80 "
100	¼-gal.	"	3 "	9 00	80 00	60 "

PRICE LIST OF FINE FLAT-HEAD WIRE NAILS.—P. 35.

Cement-coated, except first three.

L'gth.	Wire Gauge	No. in 1 lb.	Wt. of 5c pkg.	Price of 1 lb.	10 lbs.	100 lbs.
¼ in.	No. 21	17,500	1 oz.	.35	$3.00	$27.50
⅜ "	" 20	10,000	2 oz.	.25	2.00	17.50
½ "	" 20	7,500	2 oz.	.20	1.70	15.00
⅝ "	" 19	4,200	2 oz.	.17	1.40	12.00
¾ "	" 18	2,700	4 oz.	.13	1.00	9.00
⅞ "	" 18	2,350	4 oz.	.12	.90	8.00
1 "	" 18	2,000	4 oz.	.11	.85	7.50
1¼ "	" 17	1,200	4 oz.	.10	.80	7.00

PRICE LIST OF STANDARD (D) WIRE NAILS.

All cement-coated.

Style.	Length.	Wire Gauge.	No. Nails in 1 lb.	Price of 1	10	Keg.
2*d* fine.	1 in.	No. 17	1440	8	60	$5 00
3*d* "	1⅛ "	" 16	1000	7	60	4 65
4*d* box.	1½ "	" 15½	550	7	60	4 50
5*d* "	1¾ "	" 14½	366	7	60	4 50
6*d* "	2 "	" 13	250	7	55	4 35
7*d* "	2¼ "	" 13	236	7	55	4 35
8*d* "	2½ "	" 12	157	7	55	4 25
9*d* "	2¾ "	" 12	130	7	55	4 25
10*d* "	3 "	" 11	107	6	52	4 15
4*d* casing.	1½ "	" 15	550	7	60	4 65
6*d* "	2 "	" 13	250	7	55	4 45
8*d* "	2½ "	" 12	157	7	55	4 35
3*d* common.	1¼ "	" 15	615	7	55	4 45
4*d* "	1½ "	" 13	322	7	55	4 30
5*d* "	1¾ "	" 12½	254	7	55	4 30
6*d* "	2 "	" 12	200	6	52	4 20
7*d* "	2¼ "	" 11½	154	6	52	4 20
8–9*d* "	2½ "	" 10½	106	6	51	4 10
10*d* "	3 "	" 9½	74	6	50	4 00
16*d* "	3½ "	" 8	46	6	50	4 00
20*d* "	4 "	" 6	29	6	50	4 00

Carlin foundation-cutter with steel wheel is reduced to 25c each, and the Favorite Family scale, either size, to $1.75.

Special Notices by A. I. Root.

THE BOOK ABOUT BOOKER T. WASHINGTON AND HIS INDUSTRIAL SCHOOL AT TUSKOGEE, ALA.

We have made arrangements with the publishers so that we can furnish the above book postpaid to the readers of GLEANINGS for only 75 cts. The regular price is $1.00, and it is a good large book full of pictures, even at that price. Every one who gets hold of the book will want to read it through, and it is almost impossible that any one should read it without being strenghthened, and filled with enthusiasm for the great work of raising mankind from the depths of ignorance to the light of civilization ; or perhaps I might say, in other words, in commencing to climb that rugged path from earth to heaven, or "stepping heavenward," as some one else has aptly put it. We expect to give a picture of the apiary and a portrait of Mrs. Washington in our next.

SPRAY-PUMPS FOR 1901.—THE ACME ATOMIZER.

We have just made a large purchase of the handsomest light tin spray-pumps that has ever appeared on the market. It just works beautifully. I visited the manufactory at Traverse City, Mich., and saw the process of manufacture, and talked with the proprietors about the defects of the spray-pumps we have sold heretofore ; and we have something now made of IC charcoal tin that is not only light to handle, but it makes the nicest spray of any pump I ever got hold of, at any price, and yet the price is only 35 cts.; by mail, 20 cts. more. The manufacturer of these pumps says experience has demonstrated that it is cheaper to buy the inexpensive tin pumps, and throw them away when they get used up, and buy a new one, than it is to buy pumps made of galvanized iron, copper, brass, or any other material. We can sell you three of these cheap pumps for $1.00. Take one and use it till the chemicals have corroded or incrusted the working parts, then take another, and so on.

We still have pumps made of galvanized iron and brass; but I myself am inclined to think that the cheap ones may be the cheapest in the end, just as I have mentioned. We can furnish the galvanized-iron cans, that we sold last year, for only 45 cts.; all brass, 65 ; 25 cts. more added to the last two if wanted by mail. By the way, it is a good plan to have them on hand before you are ready to use them. For years past we have had stories of the loss of crops because we were sold out, or the pump was lost or damaged in the mails, or something of that sort. Lay in a stock now, and you will not have any such trouble when the busy season comes.

CONVENTION NOTICE.

The annual meeting of the New York State Association of Bee-keepers' Societies will be held in the Kirkwood, Geneva, N. Y. on Wed., Jan. 9, 1901, at 10 A. M., and continue through the afternoon and evening.

C. B. HOWARD, Sec'y,
W. F. MARKS, Pres. Romulus, N. Y.

THE MICHIGAN STATE BEE-KEEPERS' CONVENTION, DEC. 26, 27.

The following is a copy of a circular that has been mailed to the bee-keepers of Michigan:

Dear Fellow Bee-keeper :—The next annual meeting of the Michigan State Bee-keepers' Association will be in Grange Hall, Traverse City, Dec. 26th, 27th, commencing at 2 P. M. Will you please accept this as a personal invitation to be present? This will, without doubt, be the largest-attended meeting in the State for many years. We are to be honored with the presence of Mr. A. I. Root, of Medina, Ohio, whose name has become almost a household word, not only throughout the United States, but the world, wherever bees are kept. The program will be in the form of an open parliament, and those topics will be discussed that are nearest to bee-keepers' interests. A beautiful and novel badge has been adopted by the officers of the Association, and will be sold at cost, 25 cts., and the annual dues will be 25 cts. more. This will constitute expenses, except railroad and hotel bills. Reduced rates on all railroads, and the following hotels have made reduced rates to bee-keepers: Park Place Hotel, $1.50; Hotel Whiting, $1.00 to $1.50; Hotel Plankborn, $1.00; Hotel Shilsom, $1.00; Columbia Hotel, $1.00 to $1.25. Certainly all should be suited with the above rates to choose from. GEO. E. HILTON, Pres.

Fremont, Mich., Dec. 1.

Our Advertisers.

Many of our readers have doubtless become so accustomed, when reading the advertisements, to seeing the words "In writing, mention Gleanings" that they have failed to place any significance thereto. If Gleanings is mentioned in replying to advertisements contained in its columns, you bestow a favor not only upon us but the advertisers as well. It assists us by bringing our journal up to a higher standard as an advertising medium, and the advertisers are thus better able to determine which periodical pays them best. We trust our readers will do all they can to help Gleanings in this way. This is one way in which you can help us to send out a better journal. Will you do it?

Tour of All Mexico

in Pullman's finest Compartment Drawing Room, Library, Observation, and Dining Cars—all Vestibuled—with the celebrated

Open-top Car "Chililitli"

for Observation in the Mountains and Canyons, and Dining-car in the Tropics.

A delightful trip of 38 days with **Three Circle Tours in the Tropics** of the South of Mexico, and a **Visit to the Ruined Cities**.

All exclusive features of these itineraries of leisurely travel and long stops. The Special Train starts Tuesday, January 22, from Chicago.

Tour of Puerto Rico.

SPECIAL PULLMAN CARS leave Chicago **Thursday, January 17**, and **Thursday, February 14**, at 9:30 A. M., connecting with the splendid new steamships Ponce and San Juan sailing from New York the second day following. Individual Tickets sold for other sailing dates, alternate Saturdays.

Tickets Include All Expenses Everywhere.

These select limited parties will be under the special escort and management of THE AMERICAN TOURIST ASSOCIATION, Reau Campbell, General Manager, 1423 Marquette Building, Chicago.

Itineraries, Maps, and Tickets can be had on application to Agents of the Chicago, Milwaukee & St. Paul R'y.

CLUBBING OFFERS!!!

In the following offers, Review of Reviews and Youth's Companion must be new. Magazines sent to different addresses if wanted.

Gleanings, Review of Reviews, and Success	$2.50
Gleanings, Cosmopolitan, Success and Pearsons	2.50
Gleanings, Review of Reviews, McClure's, Success, and Cosmopolitan	3.50
Gleanings, Home Magazine, and National	1.25
Gleanings, Leslie's Monthly, Home Magazine	1.35
Gleanings, Youth's Companion, Home Magazine	1.80

3 TONS of FRESH CLEAN SAMPLES OF MAGAZINES and Periodicals of all kinds—Literary, News, Illustrated, Scientific, Art, Music, Sport, Agriculture, Poultry, or any general class. Before selecting your reading matters send us **10c** for **1 lb.** or **25c** for **3 lbs.** of these samples. We have all the new ones. By subscribing through us you can save from 10 to 50 per cent on all your reading matter. 1901 catalog of 40 pages free.

C. M. Goodspeed, Box 777, Skaneateles, N. Y.

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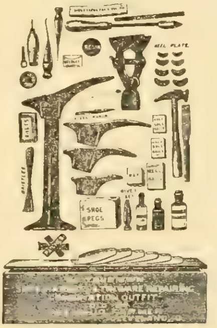


We have examined samples from all manufacturers, and believe this is the very best repair outfit on the market; easily worth $1 more than those offered by stores and other papers. It contains 48 articles, all full size and first class, and we guarantee satisfaction or will refund money. Half-soles alone are worth 50c, and are not included in other outfits. It will soon pay for itself in repairing boots, shoes, rubbers, harness, and tinware.

Repair Outfit with Ohio Farmer one year for only $2.15, or the Complete Outfit free for a club of 10 subscriptions to the Ohio Farmer. By freight.

Send for our illustrated premium list, giving wholesale prices on watches, sewing-machines, knives, and lots of other useful articles. Mention this paper.

The Ohio Farmer, : Cleveland, Ohio.

POULTRY-BOOK FREE. 64 pages, illust'd, with 3 mos. trial subscription to our paper, 10 cts.

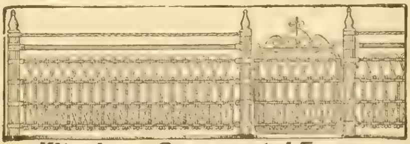
Inland Poultry Journal, Indianapolis, Ind.

QUEENS. Warranted, November, $1.00; dozen, $9.00; tested, $1.25; dozen, $12.00. See late ads. Guaranteed.

J. B. CASE, Port Orange, Fla.

FOR SALE.—3200 lbs. buckwheat honey in new oak barrels at 6½ cts. per lb., f. o. b.

E. D. TOWNSEND, Hubbardston, Mich.



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Excels in strength, beauty and durability. Made of steel and iron. Cheaper than wood. **50 Designs.** Catalog free.

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In writing mention Gleanings.

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IN ALL ITS BRANCHES." This is the title and theme of our new Year Book. Contains 192 pages, 8x11 in.; 200 new and original illustrations of best poultry farms, buildings, etc., in the country. Deals with every phase of the poultry industry in an instructive and profit bringing way. Treats also of the famous non-moisture, self-ventilating and regulating **CYPHERS INCUBATORS,** guaranteed to outhatch any other in three or more tests or money refunded. Sent for 10c in stamps. Ask for book 74. Circular and prices free. Address nearest office. **CYPHERS INCUBATOR CO., Chicago, Wayland, N.Y., Boston, Mass.**

ARE YOU MAKING MONEY?

—Out of your poultry we mean. If not, there is something wrong. May be you didn't start right. We have a book called the **20th CENTURY POULTRY BOOK** which helps to start poultry people right and then keeps them right. Tells all about the business and about the best—**Reliable Incubators and Brooders**—used all over the world. Book sent for **10c.** Order at once. **Reliable Incubator and Brooder Co., Box B-49 Quincy, Ill.**

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We have a perfect system of regulating temperature and moisture.

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which has been more successful than the **SUCCESSFUL.** You hear about them everywhere The reason is that they do their work so well. Send 6c in stamps for new 154p. book, printed in 5 languages, describing our **Successful Incubators and Brooders.** They deserve their name.

Des Moines Incubator Co., Box 50, Des Moines, Iowa.

200-Egg Incubator for $12.00

Perfect in construction and action. Hatches every fertile egg. Write for catalogue to-day.

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A BASKET FULL OF EGGS

by using Ley's Poultry Condition Powders. Puts all fowls in a normal condition; destroys all disease germs; purifies the blood; is a tonic and nutrient. Price 25 cts. a pk.; 5 for $1.00. Ley's Thoroughbred Minorca's Eggs, $1.00 for 13. Also Thoroughbred Belgian Hares. **Geo. J. Ley, Florence, Cal.**

No Money in Advance

$12.50

Our elegant **New Jewel** Drop-head Sewing Machine possessing all the latest improvements, high quality and thorough workmanship. Shipped direct at $12.50, the lowest price ever known. 30 days' free trial. Money refunded if not as represented. Guaranteed 20 years. All attachments free. 125,000 sold.

$40.00 Arlington for....$14.50
$50.00 " "....$17.00
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Other Machines at $8.00, $9.00 and $10.50

Large illustrated catalogue and testimonials **Free.**

CASH BUYERS' UNION, 158-164 W. VanBuren St., B-345, Chicago

Union Combination Saw

For Ripping, Cross-cutting, Rabbeting, Mitering, Grooving, Gaining, Boring, Scroll-sawing, Edge-moulding, Beading. Full line **FOOT** and **HAND POWER** machinery. *Send for catalog A.*

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HENS EAT BUGS.

because, they need animal food. Feed cut bone and get eggs when eggs are eggs. The

HUMPHREY Green Bone and Vegetable CUTTER

is guaranteed to cut more bone in less time and with less labor than any other cutter made. Get your money back if not perfectly satisfied. It's a rapid vegetable cutter, too. Send for handsome catalog containing egg record blanks for a whole year. Every poultry keeper should get it. It's free.

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An Egg Maker

means a money maker. **Green Cut Bone** prepared by.... **Mann's New Bone Cutter** doubles the egg product. Mann's Granite Crystal Grit, Mann's Clover Cutter and Swinging Feed Tray fit about every poultry requirement. Catalogue **FREE.**

F. W. MANN CO. Box 37, Milford, Mass.

HEN'S EGGS are worth more than twice as much in winter as in summer. You can have plenty of eggs all winter if you feed **Green Cut Bone.** To prepare it nothing equals the **ADAM GREEN BONE CUTTER.** It's the only bone cutter made with **ball bearings.** This makes it run easier than any other. Cuts hard and soft bone without choking. Easy to keep clean for it cleans itself. Made for hand and power. Send for free catalogue No. 39 **W. J. ADAM, Joliet, Ill.**

AT ANY TIME—

summer time or winter time, the ***BEST POWER*** for all purposes on the farm, in the dairy, creamery or cheese factory, is a

LEFFEL ENGINE.

They are very simple in construction, and easy to run and keep in order. Are very economic of fuel, are easy steamers and **great power developers.** They are made both horizontal and upright with engine mounted on boiler. Everything is made of best material throughout. They are ideal for cutting and grinding feed, sawing wood, pumping water, running cream separators, churns, butter workers, etc. Send stamp for **Book on Power.**

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Incubators on Trial

We will ship a **Perfected Von Culin Incubator** on trial, guaranteed to give Satisfaction. Control of heat and moisture is perfect. Non-explosive metal lamps used. Everything practical, and the successful result of 25 years' experience. We make brooders, etc. Catalog free.

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We Pay the Freight.

INVESTIGATE BEFORE YOU BUY.

We want our customers to be perfectly satisfied before they spend their money. Investigate the claims of **all** incubators and then decide. We believe you will find that the

SURE HATCH INCUBATORS

AND COMMON SENSE FOLDING BROODERS are giving better satisfaction than any other made. It's because they are so simple, sensible and **sure**. They are built for busy people, who haven't time to fuss and bother. **Our catalogue is FREE.** We don't ask you to pay for it. Isn't it worth examining?

SURE HATCH INCUBATOR COMPANY, CLAY CENTER, NEBRASKA.

Standard Bred

White Plymouth Rocks.

Only a few fine cockerels left. Write for particulars.

ADDIE S. MILLER,
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BELG. HARES

W. HAHMAN, Box 3, ALTOONA, PA.

Belgian Hares

I have some fine hares for sale at reasonable prices.

J. F. Moore, : Tiffin, Ohio.

Belgian or German Hares,

High-class Fancy Pigeons, and Buff, Black, and White Cochin Bantams. Enclose 4c in stamps for catalog. Satisfaction guaranteed or your money refunded, less the express charges. Address
MICHAEL K. BERGEY, Souderton, Montgomery Co., Pa.

FOR SALE.—Poultry, fruit, and bee ranch at Port Angeles, Wash. Finest opportunity in the world for the right man. Write now. GEO. V. SMITH.

1200 FERRETS FOR SALE. Small, medium, and large sized; some trained. **First-class** stock. New price list free

N. A. KNAPP,
Rochester, Lorain County, Ohio.

Longest Tongues.

For two years I have been advertising and selling a superior strain of bees. I knew that they were really superior, that they stored more honey than any other strain of bees with which I was acquainted, and that others who had tried them had the same report to make; I knew that they were gentle and hardy, as well as industrious, but just *why* they should store more honey I was unable to decide. It is possible that I do not now know why; but at last I have got a hint—they have *very long tongues*. The average length of bees' tongues is 16-100 of an inch, while these bees have tongues 23-100 of an inch in length. Only one other report has been made of bees having tongues of this length. This breeder, who has been furnishing me queens, has been breeding this strain of bees for more than 20 years, always selecting the best to breed from, and, for this reason, this trait, or peculiarity, that of having long tongues, must have become fairly well *fixed*—much more so than in that of some chance sport. The discovery of this reason for their superiority is the source of considerable satisfaction to me. Heretofore I could only assert that the bees were superior, that they would store more honey, but I could give no reason why, except that this trait had been developed by years of selection and careful breeding; now I can say why, or, at least, give a reasonable reason why.

I wish to repeat what I have already said several times; viz., that it is impossible for a bee-keeper to invest a small sum of money to better advantage than by introducing this strain of bees into his apiary. It will repay him a hundred fold—perhaps a thousand fold. In addition to their known length of tongue, there are also the additional traits of hardiness and gentleness—something well worth considering.

To those who are thinking of trying this strain of bees, I would say, don't wait until next spring before sending in your order. Last spring, when I began sending out queens, there were orders on my books for nearly 200 queens. Orders are already coming in to be filled next spring. They will be filled in rotation; so, if you wish to get a queen next spring, send in your order this fall. The price of a queen is $1.50; but safe arrival, safe introduction, purity of mating, and entire satisfaction are all guaranteed. The queen can be returned any time within two years, and the money refunded, and 50 cents additional sent to pay for the trouble.

The REVIEW for this year and next (two years) and one of these queens for only $2.00. As soon as your order is received, the back numbers for this year will be sent, and your subscription put on the book to the end of 1901, and next spring the queen will be sent you.

I have many unsolicited testimonials as to the superiority of this strain of bees. Here is the last we received:

WOODLAND, ILLS., Nov. 20, 1900.

Mr. W. Z. Hutchinson:—

Can any more of those queens be purchased of you next season? The one I bought of you last June out-stripped every thing else in this vicinity. As a breeder, she certainly capped the climax of any thing that ever came under my observation in the bee-line. And her offspring—well, they are simply marvelous as workers. From her colony, in September, I extracted 65 lbs. of honey of the finest quality and, remember, the honey season here was a very poor one. There are a number of apiaries in this vicinity, and I do not know of one that will average 10 lbs. per colony. And I want to add right here that the cappings of the honey in this colony were of snowy whiteness; and, to-day, as I put this colony in winter quarters, I find the eight combs well filled and capped with that same snowy whiteness that was so conspicuous in the supers. I stand ready to challenge any apiarist in this locality to produce bees the equal of these as honey-gatherers. Two of my friends wish to get queens of this strain, and I certainly want more of them if they can be gotten.

Yours respectfully, C. E. AURICK.

Address all Orders to

W. Z. HUTCHINSON, = FLINT, MICHIGAN.

BEE-HIVES AND HONEY-BOXES,

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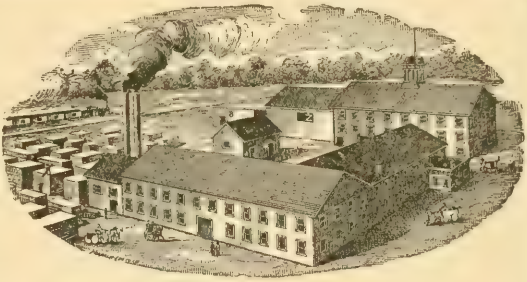

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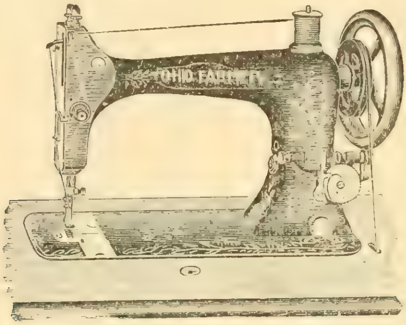

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